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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANagement services

SPACE DIVISION CHRYSLER CORPORATION

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EFFECTS OF REACTION CONTROL SYSTEM JET SIMULATION ON THE STABILITY AND CONTROL CHARACTERISTICS OF A 0.015-SCALE SPACE SHUTTLE ORBITER MODEL IN THE AMES RESEARCH CENTER 3.5-FOOT HYPERSONIC WIND TUNNEL

(OA73)

By

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Prepared under NASA Contract Number NAS9-13247

By

Data Management Services
Chrysler Corporation Space Division
New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS

Test Number: ARC 3.5-167
NASA Series Number: OA73
Test Dates: July 11 to July 18, 1973
Model Number: 42-0

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ON THE STABILITY AND CONTROL CHARACTERISTICS OF A 0.015-SCALE SPACE SHUTTLE ORBITER MODEL IN THE AMES RESEARCH CENTER 3.5-FOOT HYPERSONIC WIND TUNNEL (OA73)

By T. J. Dziubala and John Marroquin
J. W. Cleary* and J. A. Mellenthin*

ABSTRACT

An experimental investigation was performed in the Ames Research Center 3.5-Foot Hypersonic Wind Tunnel (Test OA73) to obtain detailed effects which interactions between the RCS jet flow field and the local orbiter flow field have on orbiter hypersonic stability and control characteristics. Six-component force data were obtained through an angle-of-attack range of 15 to 35 degrees with 0° angle of sideslip. The test was conducted with yaw, pitch and roll jet simulation at a free-stream Mach number of 10.3. These data simulate two (2) SSV re-entry flight conditions at Mach numbers of 28.3 and 10.3. Fuselage base pressures and pressures on the non-metric RCS pods were obtained in addition to the basic force measurements. Model 42-0 was used for these tests.

* NASA Ames

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COEFFICIENTS SCHEDULE:

(A) CN, CLM, CA, CY, CYN, AND CBL vs. Alpha

NOMENCLATURE
General

SYMBOL	SADSAC SYMBOL	DEFINITION
a		speed of sound; m/sec, ft/sec
C_p	CP	pressure coefficient; $(p_l - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m^2, psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m^2, psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ψ	PSI	angle of yaw, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; kg/m^3, $slugs/ft^3$

Reference & C.G. Definitions

SYMBOL	SADSAC SYMBOL	DEFINITION
A_b		base area; m^2, ft^2
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
l_{REF} $\bar{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m^2, ft^2
	MRP	moment reference point
X_{cg}	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
Z_{cg}	ZMRP	moment reference point on Z axis

SUBSCRIPTS

b	base
l	local
s	static conditions
t	total conditions
∞	free stream

NOMENCLATURE (Continued)

Body-Axis System

SYMBOL	SADSAC SYMBOL	DEFINITION
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS\ell_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_ℓ	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
		Stability-Axis System
C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS\ell_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_ℓ	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
L/D	L/D	lift-to-drag ratio; C_L/C_D

NOMENCLATURE (Continued)

ADDITIONS TO STANDARD LIST

SYMBOL	PLOT SYMBOL	DEFINITION
A_{b_M}		OMS pod base area, ft^2
P_t		freestream total pressure, psia
P_c	PC	model RCS plenum chamber pressure, psia
T_t		freestream total temperature, °R
R/ft	RN/L	freestream unit Reynolds number, per foot
X_{CP}/ℓ_B	XCP/L	longitudinal center of pressure location, fraction of body length
δ_{BF}	BDFLAP	body flap deflection angle, deg.
δ_e	ELEVON	elevon deflection angle, deg.
δ_{SB}	SPDBRK	speed brake deflection angle, deg.
ϵ	EPSILON	model OMS nozzle expansion ratio

INTRODUCTION

Investigations were performed to determine interaction effects of Reaction Control System (RCS) flow on the aerodynamic characteristics of the Space Shuttle Vehicle (SSV) orbiter. These tests were performed in the Ames Research Center (ARC) 3.5-Foot Hypersonic Wind Tunnel on a 0.015-scale model of the SSV Configuration 3L orbiter. Orbiter model 42-0 was used for this test.

Nominal freestream test conditions were Mach = 10.3 and a unit Reynolds number of 1.74 million per foot.

These test data are applicable to two points in the reentry trajectory:

M	q-psf	*R x 10^6	Altitude -ft
28.3	20	0.688	253,000
10.3	106.7	5.89	168,000

Complete simulation of the RCS jet/free-stream interaction would require exact duplication of both the above conditions and the mass flow ratio, momentum, pressure, thrust and plume shape of the RCS jets. The simulation of all these conditions in a scaled-model test is not possible and, therefore, those conditions which were considered of primary significance were simulated.

The Hypersonic Mach Number Independance Principle (reference 12, which states that at very large values of M_∞ the flow pattern and pressure coefficients on a body are independent of M_∞) was used as a basis for applying results obtained at M = 10.3 to the M = 28 case.

Based upon the Secondary Injection Momentum Principle for injection

* Reynolds number based on orbiter length (107.5 ft.)

of a jet perpendicular to the free-stream, the dominant parameters affecting interaction forces are the jet momentum and jet pressure. Mass flow rate ratio and jet plume shape are less important parameters. Thus, the design of the model nozzles was based entirely on matching jet to free-stream pressure ratio and momentum ratio.

RCS flow was simulated by blowing jets of cold air from non-metric nozzles, attached to the model support sting, in proximity to the fuselage base. Nozzle combinations which represented pitch, roll, and yaw controls were tested in conjunction with various elevon and body flap control settings. Pitch-up and pitch-down control was simulated with jets flowing only on one side of the model on the assumption that the induced effects for two sides blowing would be twice as great.

The RCS nozzle hardware was designed, built and calibrated by the Convair Division of General Dynamics, Inc. at San Diego, California. Nozzle thrusts were measured using a single-component strain-gauge balance. All nozzles except N_{19} were calibrated at ambient atmospheric conditions and corrected to vacuum conditions. The N_{19} nozzle was calibrated under near vacuum conditions because of its high expansion ratio. Mass flow rates were measured using a calibrated orifice meter. Plots of the thrust calibration data, and corresponding theoretical variations, are presented in table V.

For the in-tunnel tests, six-component force data were measured using the ARC/Task MK XIV B, 1.0-inch diameter internal balance which was supported by ARC sting No. A13911060. Pressure taps were located within

the RCS plenum, at five points on the plenum base and at one point on the fuselage base (see figure 2d). Model RCS plenum pressure was set to obtain desired momentum ratio and pressure ratio on the basis of the thrust calibrations provided by General Dynamics.

Normal force static check calibrations, obtained prior to and immediately following each run, indicated minimal output drift but both side force gauges and the rolling moment gauge exhibited consistent, positive shifts, on the order of 1/2% of full scale output throughout the test. The character of these shifts is indicative of thermal stresses induced by heating of the model and balance during the course of each run. Axial force zero shifts were generally within 1/2% of full scale; however for runs 17, 18, 20, 22 to 25, and 27 zero shifts of magnitudes ranging from 1/2% to nearly 7% of full scale occurred. The cause of these shifts was not determined but, since the axial force data were of secondary importance to this test, the balance was not replaced. For these runs the level of axial force was adjusted so that with the air of the RCS jets off the axial force conformed with data for other runs known to be valid. This adjustment was made primarily to improve the estimates of pitching moment since pitching-moment data is influenced secondarily by the axial force when moments are transferred to the center of gravity.

Prior to each run, data were recorded with RCS jets flowing (no tunnel flow) to determine direct impingement effects. With the tunnel flowing, data were then recorded with RCS flow both off and on at each 5° increment of angle of attack in the range from 15° to 35°. Thus, even

though the balance exhibited significant shifts the incremental data due to RCS flow with the possible exception of the axial force data, should be valid since corresponding jet off and jet on points were recorded within a relatively short time span.

Surface flow patterns of the combined tunnel and RCS flows on the surface of the model were obtained using a mixture of titanium dioxide and oil. Shadowgraph pictures were taken at selected test points.

Seven oil-flow runs and 26 valid force runs were made in the interim of July 11 to 18, 1973.

CONFIGURATIONS INVESTIGATED

The test article, provided by Rockwell, was a 0.015-scale model (number 42-0) of the VL70-000139B SSV orbiter Configuration 3. A three-view sketch of the model, showing the principal dimensions, and photographs of the model installed in the tunnel and the RCS hardware are shown in figures 2b and 3.

The model was constructed of Armco 17-4 stainless steel and was comprised of the following parts: fuselage, canopy, wing and cuff, vertical tail and orbital maneuvering system (OMS) pods. Elevon brackets for 0°, +15°, -20° and -40°, body flaps with deflections of 0°, +13.75° and -14.25°, and a rudder with a simulated 40° speed brake deflection were tested.

The RCS plenum was clamped to the sting at the base of the model; air loads acting on it and forces produced by the RCS jets were not measured by the balance. Five interchangeable nozzles, simulating pitch, yaw and roll controls as defined in figure 2c, were built and calibrated by the Convair division of General Dynamics.

The following nomenclature was used to designate the model com-components:

Component	Definition
B_{19}	Vehicle configuration 3 (139B) fuselage of the SSV orbiter configuration (VL70-000139B)
C_7	Basic vehicle configuration 3(139) canopy (VL70-000139)
E_{23}	Elevon on vehicle configuration 3 (139B) wing (VL70-000139B)

F_5	Basic vehicle configuration 3 (139) body flap (VL70-000139)
M_6	Modified OMS-RCS pod for the Rockwell International SSV configuration 3 (VL70-000139B)
N_{19}	Twin LH yaw nozzle sized to simulate the center two prototype 3 configurations (VL70-000140A) RCS yaw engines when tunnel Mach No. equals M_∞ for prototype trajectory
N_{20}	Twin LH yaw nozzle sized to simulate the center two prototype 3 configurations (VL70-000140A) RCS yaw engines at M_∞ = 28.3 q_∞ = 20 psf with tunnel Mach No. equal to 10.3
N_{21}	Twin LH pitch down nozzle sized to simulate the forward two prototype configuration 3 (VL70-000140A) aft RCS pitch down engines at M_∞ = 28.3, q_∞ = 20 psf with tunnel Mach No. equal to 10.3. (Nozzles are canted 12° aft and 20° outboard)
N_{22}	Same as N_{21}, except nozzles are pointed straight down
N_{23}	Twin RH pitch up nozzle sized to simulate the forward two prototype 3 configurations (VL70-000140A) aft RCS pitch up engines at M_∞ 28.3, q_∞ = 20 psf with tunnel Mach No. equal to 10.3. (Nozzle are pointed straight up)
O_{139B}	Complete orbiter configuration consisting of B_{19} C_7 F_5 M_6 V_7 R_5 W_{107} E_{23}
R_5	Basic vehicle configuration 3 (139) rudder for vertical tail (VL70-000139)
V_7	Basic vehicle configuration 3 vertical tail (VL70-000139)
W_{107}	Vehicle configuration 3 (139B) wing (VL70-000139B)

TEST FACILITY DESCRIPTION

The test program was conducted in air in the Ames 3.5-Foot Hypersonic Wind Tunnel. This facility is a blowdown-type tunnel that utilizes a pebble-bed heater to heat the air, and axisymmetric contoured nozzles to provide flow Mach numbers of 5.3, 7.4, and 10.4. The nozzle walls are insulated from the hot air stream by injecting helium into the nozzle boundary layer through annular slots upstream of the throat. The tunnel is equipped with a model quick-insert mechanism for quickly moving models into and out of the air stream.

A high-speed, analog-to-digital data acquisition system is used to record test data on magnetic tape. The present system is equipped to measure and record the outputs from 80 thermocouples and/or other types of transducers in addition to 20 channels of tunnel parameters.

DATA REDUCTION

Force and moments measured by the balance were resolved about body and stability axes and reduced to dimensionless coefficients by standard ARC data reduction methods. Corrections applied to the data include model static weight tare, balance and sting deflections and tunnel flow inclination. No adjustments were made to axial-force or drag coefficients for model base drag. Direct impingement force data, obtained without tunnel flow, were reduced to coefficients using the average dynamic pressure of the corresponding tunnel-on run.

Center-of-pressure location was computed in percent of body length by:

$$X_{CP}/\ell_B = (X_{CG} - \frac{C_m \bar{c}}{C_N})/\ell_B$$

where

X_{CG} = location of reference center of gravity aft of model nose.

ℓ_B = body length, inches

Reference Dimensions and Constants are as follows:

Symbol	Definition	Value
A_b	Fuselage base area, OMS pods on	0.045 ft^2
	Fuselage base area, OMS pods off	0.047 ft^2
A_{b_M}	RCS pod area (two pods)	0.019 ft^2
b	Span, wing	14.050 in.
X_{CG}	Reference C.G.	12.58 in.

DATA REDUCTION (Concluded)

Symbol	Definition	Value
Z_{CG}	Reference C.G.	FRL (Z=6.00)
CL BAL X	Center, balance force, measured from X_o = 0, See Figure 8.	16.63 in.
CL BAL Z	Centerline, balance	W.L. 5.85 in.
$\bar{c}$	MAC, wing	7.122 in.
ℓ_B	Reference body length	19.35 in.
S	Area, wing (ref.)	0.605 ft^2

REFERENCES

	Drawings Rockwell Drawings No.	Title
1	VL70-000140A	Oribter Configuration Control.
2	VL70-000094A	Lines Control Aft Body and OMS Pod.
3	VL70-000139B	Orbiter Lines.
4	SS-A-00106	Model Assembly and Details 139 and 139B Lines SSV Orbiter.
5	SS-A-00107	Details and Assembly Wing and Vertical 0.015-Scale SSV.
6	ARC Drawing No. A13911D60	3.5-Foot Hypersonic W.T. Open Throat Model Support 1.0-Inch Balance Sting.
7	G/D Convair WT-72-108101	Tunnel Installation 0.015-Scale RCS Power Orbiter - Ames RC 3.5-Foot.
8	WT-72-108102	Assembly and Details RCS Power Orbiter Force Model 0.015-Scale.

	Reports Report No.	Title
9	SD73-SH-0140	Pretest Information for Force Tests of the 0.015-Scale Space Shuttle Vehicle Orbiter Configuration 3A in the Ames Research Center 3.5-Foot Hypersonic Wind Tunnel (OA50), 25 May 1973.
10	G/D Convair TN-73-AE-02	Pretest Report Wind Tunnel Tests of a 0.015-Scale Space Shuttle Orbiter Model in the NASA-ARC 3.5-Foot Hypersonic Tunnels to Determine Effects of RCS Jet-Flow Field Interactions on the Aerothermodynamic Characteristics (MA6) January 1973.
11	NACA TMX-682	Holdaway, George H.; Polek, Thomas E; and Kemp, Joseph H. Jr.: Aerodynamic Characteristics of a Blunt Half-Cone Entry Configuration at Mach Numbers of 6.2, 7.4, and 10.4. NASA TM X-682, 1963.

REFERENCES (Concluded)

12	<u>Textbook</u>	Hayes, Wallace D.; Probstein, Ronald F.: Hypersonic Flow Theory, Academic Press, New York, 1959.

TABLE I

TEST : 0A73 (ARC 3.5" #167)

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
10.29	1.72×10^6	2.43	1540

BALANCE UTILIZED: ARC / Task 1.0-in. Dia. MK XIV B

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	800 lb.	± 1/2 %	±.020
SF	400 lb.	± 3/4 %	±.015
AF	100 lb.	± 1/2 %	±.0025
PM	1600 in. lb.	± 1/2 %	±.005
RM	250 in. lb.	± 1/2 %	±.0004
YM	660 in. lb.	± 1 %	±.002

COMMENTS: Normal balance sensitivity is ±1/2 % of full capacity; higher values for side force and yawing moment reflect sensitivity due to temperature; excessive axial force shifts occurred in runs 17, 18, 20, 22-25, 27.

TABLE IIA. OIL FLOW DATA

TEST : OA73 (ARC 3.5 #167)	DATA SET/RUN NUMBER COLLATION SUMMARY																	DATE :
		SCHD.		PARAMETERS/VALUES										NO. OF RUNS	RCS			
~~DATA SET IDENTIFIER~~	CONFIGURATION	α	β	δ_e	δ_{BF}	δ_{SB}		RUN	M	q PSF	P_c PSIA	T_c °R	R/FT			P_c PSIA	ε	NOTES
	$O_{139B}\,N_{20}$	25	0	0	0	40		1	10.29	350	1800	2000	1.72×10^6	1		0	1.159	
								1R								0		1
								2								275		2
								3								275		
	$O_{139B}\,N_{21}N_{23}$							4								294		3
								4R										4
								5										4

TEST RUN NUMBERS

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES

NOTES:
1. REPEAT RUN 1 DEE TO FLUCTUATION OF RCS PLENUM PRESSURE
2. OIL FLOW N.G. DUE TO DRY OIL MIXTURE
3. RCS FLOWING BEFORE INSERTION OF MODEL INTO TUNNEL STREAM
4. MODEL INSERTED INTO TUNNEL STREAM BEFORE STARTING RCS FLOW

TABLE IIB. RCS ON FORCE DATA

TEST : 0A73 (ARC 3.5#/167)

DATA SET/RUN NUMBER COLLATION SUMMARY

DATA SET IDENTIFIER	CONFIGURATION		SCHD. α	SCHD. β	δ_e	δ_{BF}	δ_{SB}	RUN	M	q PSF	P_c PSIA	T_c °R	R/FT	NO. OF RUNS	RCS P_c PSIA	RCS ϵ
RB5N01	O139B	N_{20}	A	0	-20	0	40	7	10.29	350	1800	2000	1.72 × 10⁶	1	275	1.159
02					15			8								
03					-40			9								
07		$N_{21}N_{23}$			-40	-14.2		13							294	
08					-20			14								
09					15	13.7		15								
10					0	0		16								
11		N_{20}						17							275	
12		N_{21}						18							309	
13					15	13.7		19								
14					-20	-14.2		20								
15					-40			21								
16		N_{23}			-40			22							278	
17					-20			23								
18					0	0		24								
19		N_{20}			0	0		25							275	
20					-40	-14.2		26								
21					-40	-14.2		27							314	10.62

TEST RUN NUMBERS

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES A: α = 15°, 20°, 25°, 30°, 35°

TABLE IIB. RCS ON FORCE DATA (Concluded)

TEST: 0A73 (ARC 3.5-167)

DATA SET/RUN NUMBER COLLATION SUMMARY

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	δ_e	δ_{BF}	δ_{SB}		Run	M	q PSF	P_c PSIA	T_c °R	R/FT	NO. OF RUNS		P_c PSIA (RCS)	ε (RCS)	TEST RUN NUMBERS
RB5N22	$O_{139}N_{19}$	A	0	-20	-14.2	40		28	10.29	350	1800	2000	1.72×10^6	1		314	10.62	
23				15	13.7			29										
24				0	0			30										
25	$N_{22}N_{23}$			0	0			31								275	1.159	
26				-40	-14.2			32										
27	$N_{21}N_{23}$							33								375		
28	N_{21}							34										
29	N_{20}							35										

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES

A: $\alpha = 15°, 20°, 25°, 30°, 35°$

TABLE IIC. RCS OFF FORCE DATA

TEST: 0A73 (ARC 3.5 #167)

DATA SET/RUN NUMBER COLLATION SUMMARY

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	δ_e	δ_{BF}	δ_{SB}	RUN	M	q PSF	P_c PSIA	T_c °R	R/FT.	NO. OF RUNS	RCS P_c PSIA	RCS ε
RB5F01	O_{139B} N_{20}	A	0	-20	0	40	7	10.29	350	1800	2000	1.72×10^6	1	0	1.159
02				15			8								
03				-40			9								
07	N_{21} N_{23}			-40	-14.2		13								
08				-20			14								
09				15	13.7		15								
10				0	0		16								
11	N_{20}						17								
12	N_{21}						18								
13				15	13.7		19								
14				-20	-14.2		20								
15				-40			21								
16	N_{23}			-40			22								
17				-20			23								
18				0	0		24								
19	N_{20}			0	0		25								
20				-40	-14.2		26								
21				-40	-14.2		27								10.62

TEST RUN NUMBERS

1 7 13 19 25 31 37 43 49 55 61 67

COEFFICENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES: A: α = 15°, 20°, 25°, 30°, 35°

TABLE IIC. RCS OFF FORCE DATA (Concluded)

TEST: 0A73 (ARC 3.5 #167)

DATA SET, RUN NUMBER COLLATION SUMMARY

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δ_e	δ_{BF}	δ_{SB}		RUN	M	q PSF	P_c PSIA	T_c °R	R/FT	NO. OF RUNS	RCS	P_c PSIA	ε	
RB5F22	$O_{139B}N_{19}$	A	0	-20	-14.2	40		28	10.27	350	1600	2000	1.72×10^6	1		0	10.62	
23				15	13.7			29										
24				0	0			30										
25	$N_{22}N_{23}$			0	0			31									1.159	
26				-40	-14.2			32										
27	$N_{21}N_{23}$							33										
28	N_{21}							34										
29	N_{20}							35										

TEST RUN NUMBERS

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES

A: $\alpha = 15°, 20°, 25°, 30°, 35°$

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY - B19

GENERAL DESCRIPTION: Fuselage, Configuration 3, per Rockwell Lines VL70-000139B.

NOTE: Identical to B_{17} except forebody.

Model Scale = .015

DRAWING NUMBER: VL70-000139B

DIMENSIONS:

	FULL-SCALE	MODEL SCALE
Length - IN.	1290.3	19.35450
Max. Width - IN.	267.6	4.0140
Max. Depth - IN.	244.5	3.66750
Fineness Ratio	4.82175	4.82175
Area - FT^2		
Max. Cross-Sectional	386.67	0.08700
Planform		
Wetted		
Base		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: Canopy - C7

GENERAL DESCRIPTION: Configuration 3 per Rockwell Lines VL70-000139

Model Scale = .015

DRAWING NUMBER VL70-000139

DIMENSION:	FULL SCALE	MODEL SCALE
Length (X_o = 433 to X_o = 670) - in. FS	237	3.5550
Max Width		
Max Depth (Z_o = to Z_o = 501) - in FS		
Fineness Ratio		
Area		
Max Cross-Sectional		
Planform		
Wetted		
Base		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ELEVON - E23

GENERAL DESCRIPTION: Configuration 3 per W107 Rockwell Lines VL70-000139B, data for (1) of (2) sides

Model Scale = .015

DRAWING NUMBER: VL70-000139B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area - FT^2	205.52	0.04624
Span (equivalent) - IN.	353.34	5.30010
Inb'd equivalent chord	114.78	1.72170
Outb'd equivalent chord	55.00	0.8250
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	.208	.208
At Outb'd equiv. chord	.400	.400
Sweep Back Angles, degrees		
Leading Edge	0.00	0.00
Tailing Edge	-10.24	-10.24
Hingeline	0.00	0.00
Area Moment (Normal to hinge line) - FT^3 Product of Area Moment	1548.07	0.00522

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: F5 Body Flap

GENERAL DESCRIPTION: 3 Configuration per Rockwell Lines VL70-000139

Scale Model = .)15

DRAWING NUMBER VL70-000139

DIMENSION:	FULL SCALE	MODEL SCALE
Length - in	84.70	1.2705
Max Width - in	267.6	4.0140
Max Depth		
Fineness Ratio		
Area - Ft^2		
Max Cross-Sectional		
Planform	142.5	0.03207
Wetted		
Base	38.0958	0.00857

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT : OMS pod (M6)

GENERAL DESCRIPTION : Basic Configuration 3A OMS pods with non-metric RCS engine housing and nozzles. Same geometry as M4.

DRAWING NUMBER : VL70-000139B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length	346.0	5.1900
Max Width	108.0	1.620
Max Depth	113.0	1.695
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: NOZZLES - N19

GENERAL DESCRIPTION: Basic configuration 3A (VL70-000139B) OMS Nozzles with Cold Jet Simulation of Yaw Control (Lateral Thrust) at Mach 10.3 Entry Condition

MODEL SCALE = 0.015

DRAWING NO. ______

DIMENSIONS	FULL SCALE	MODEL SCALE
Freestream Mach No. 10.3		
No. of nozzles (Left Side Only)	2	2
Expansion Ratio	—	10.81
Diameter ~ in.	Direct Scaling not Applicable	
Exit		0.1440
Throat		0.0437
Area ~ IN^2.		
Exit		.01629
Throat		.00151
Thrust Centerline		
X	1533.0	22.995
Y	--	--
Z	472.5	7.087

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: NOZZLES - N20

GENERAL DESCRIPTION: Basic Configuration 3A (VL70-000139B) OMS Nozzles with Cold Jet Simulation of Yaw Control (Lateral Thrust) at Mach 28.3 Entry Condition

MODEL SCALE = 0.015

DRAWING NO. ______

DIMENSIONS	FULL SCALE	MODEL SCALE
Freestream Mach No. Simulation 28.3		
No. of nozzles (Left Side Only)	2	2
Expansion Ratio	—	1.159
Diameter ~ in.		
Exit	Direct Scaling Not Applicable	0.1440
Throat		0.1338
Area ~ in^2.		
Exit		0.1629
Throat		0.01405
Thrust Centerline		
X F.S.	1533.0	22.995
Y	—	—
Z W.L.	472.5	7.087

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: NOZZLES - N_{21}

GENERAL DESCRIPTION: Basic Configuration 3A (VL70-000139B) OMS Nozzles with Cold Jet Simulation of Combined Yaw/Roll Control (Thrust Canted 12 Degrees Aft and 20 Degrees Outboard) at Mach 28.3 Entry Condition

MODEL SCALE = 0.015

DRAWING NO. ________

DIMENSIONS	FULL SCALE	MODEL SCALE
Freestream Mach No. Simulation 28.3		
No. of nozzles (Left Side Only)	2	2
Expansion Ratio	—	1.159
Diameter ~ in.	Direct Scaling Not Applicable	
Exit		0.1440
Throat		0.1338
Area ~ in^2.		
Exit		0.01629 IN^2
Throat		0.01405 IN^2
Thrust Centerline		
X F.S.	1533.0	22.995
Y B.P.	116.7	1.750
Z W.L.	472.5	7.087

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: NOZZLES - N_{22}

GENERAL DESCRIPTION: Basic Configuration 3A (VL70-000139B) Nozzles with Cold Jet Simulation of Roll Control (Vertical Thrust) at Mach 28.3 Entry Condition, Left Side Nozzles

MODEL SCALE = 0.015

DRAWING NO. __________

DIMENSIONS	FULL SCALE	MODEL SCALE
Freestream Mach No. Simulation 28.3		
No. of nozzles (Left Side Only)	2	2
Expansion Ratio	—	1.159
Diameter ~ in.		
Exit	Direct Scaling Not Applicable	0.1440
Throat		0.1338
Area ~ in^2.		
Exit		.01629
Throat		.01405
Thrust Centerline		
X F.S.	1533.0	22.995
Y B.P.	116.7	1.750
Z	—	—

TABLE III. - MODEL DIMENSIONAL DATA - Continued

MODEL COMPONENT: NOZZLES - N_{23}

GENERAL DESCRIPTION: Basic Configuration 3A (VL70-000139B) Nozzles with Cold Jet Simulation of Roll Control (Vertical Thrust) at Mach. 28.3 Entry Condition. Right Side Nozzles

MODEL SCALE = 0.015

DRAWING NO. ______

DIMENSIONS	FULL SCALE	MODEL SCALE
Freestream Mach No. Simulation 28.3		
No. of nozzles (Right Side Only)	2	2
Expansion Ratio	—	1.159
Diameter ~ in.		
Exit	Direct Scaling Not Applicable	0.1440
Throat		0.1338
Area ~ in^2.		
Exit		.01629
Throat		.01405
Thrust Centerline		
X	1533.0	22.995
Y	116.7	1.750
Z	—	

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RUDDER - R5

GENERAL DESCRIPTION: 2A, 3 and 3A Configuration per Rockwell Lines VL70-000095

Model Scale = .015

DRAWING NUMBER: VL70-000095

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area - FT^2	106.38	0.024
Span (equivalent) - IN.	201.0	3.015
Inb'd equivalent chord	91.585	1.374
Outb'd equivalent chord	50.833	0.762
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.400	0.400
At Outb'd equiv. chord	0.400	0.400
Sweep Back Angles, degrees		
Leading Edge	34.83	34.83
Tailing Edge	26.25	26.25
Hingeline	34.83	34.83
Area Moment (Normal to hinge line) - FT^3 Product of Area and Mean Chord	526.13	0.0018

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: VERTICAL - V_7

GENERAL DESCRIPTION: Centerline vertical tail, doublewedge airfoil with rounded leading edge.

NOTE: Same as V5, but with manipulator housing removed.

Model Scale = .015

DRAWING NUMBER: VL70-000139

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area (Theo) Ft^2	425.92	0.09583
Planform		
Span (Theo) In	315.72	4.73580
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	0.404	0.404
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	26.249	26.249
0.25 Element Line	41.130	41.130
Chords:		
Root (Theo) WP	268.50	4.02750
Tip (Theo) WP	108.47	1.62705
MAC	199.81	2.9915
Fus. Sta. of .25 MAC	1463.50	21.9525
W. P. of .25 MAC	635.522	9.53283
B. L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle Deg	10.000	10.000
Trailing Wedge Angle Deg	14.920	14.920
Leading Edge Radius	2.0	0.0300
Void Area - Ft^2	13.17	0.00296
Blanketed Area	0.00	0.00

MODEL COMPONENT: WING-W 107

GENERAL DESCRIPTION: Configuration 3 per Rockwell Lines VL70-000139B

NOTE: Same as W103, except cuff, airfoil and incidence angle.

Model Scale = .015

TEST NO. DWG. NO. VL70-000139B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area (Theo.) Ft^2		
Planform	2690.00	0.60525
Span (Theo In.	936.68	14.050520
Aspect Ratio	2.265	2.265
Rate of Taper	1.177	1.177
Taper Ratio	0.200	0.200
Dihedral Angle, degrees (@ TE of Elevon)	3.500	3.500
Incidence Angle, degrees	0.500	0.500
Aerodynamic Twist, degrees	+3.000	+3.000
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	-10.24	-10.24
0.25 Element Line	35.209	35.209
Chords:		
Root (Theo) B.P.0.0.	689.24	10.33860
Tip, (Theo) B.P.	137.85	2.06775
MAC	474.81	7.12215
Fus. Sta. of .25 MAC	1136.89	17.05335
W.P. of .25 MAC	299.20	4.4880
B.L. of .25 MAC	182.13	2.73195
EXPOSED DATA		
Area (Theo) Ft^2	1752.29	0.39426
Span, (Theo) In. BP108	720.68	10.81020
Aspect Ratio	2.058	2.058
Taper Ratio	0.2451	0.2451
Chords		
Root BP108	562.40	8.4360
Tip 1.00 $\frac{b}{2}$	137.85	2.06775
MAC	393.03	5.89545
Fus. Sta. of .25 MAC	1185.31	17.77965
W.P. of .25 MAC	300.20	4.5030
B.L. of .25 MAC	251.76	3.7764
Airfoil Section (Rockwell Mod NASA) XXXX-64		
Root $\frac{b}{2}$ =	0.10	0.10
Tip $\frac{b}{2}$ =	0.12	0.12
Data for (1) of (2) Sides		
Leading Edge Cuff		
Planform Area Ft^2	118.333	0.02662
Leading Edge Intersects Fus M. L. @ Sta	500	7.5000
Leading Edge Intersects Wing @ Sta	1083.4	16.2510

Table IV. RCS Direct Impingement Force Data

RUN NO.	ΔC_N	ΔC_A	ΔC_Y	ΔC_m	ΔC_n	ΔC_l
7	0.0	0.0	- .0017	0.0	.0002	.0001
9	0.0	.0003	.0003	0.0	0.0	.0001
15	- .0110	- .0042	- .0050	.0106	.0025	- .0019
16	- .0120	- .0030	- .0047	.0116	.0318	- .0022
17	- .0023	0.0	- .0016	- .0002	.0002	0.0
19	- .0121	- .0026	- .0012	.0128	.0011	- .0012
20	- .0148	- .0004	- .0004	+ .0130	+ .0004	- .0012
21	- .0143	- .0017	- .0010	+ .0133	+ .0003	- .0012
22	+ .0008	+ .0001	+ .0021	- .0005	+ .0006	- .0004
23	+ .0010	+ .0002	- .0017	- .0004	+ .0009	- .0005
24	+ .0014	0.0	- .0031	- .0007	+ .0010	- .0005
25	+ .0001	+ .0001	+ .0004	- .0001	+ .0001	0.0
26	- .0001	- .0003	0.0	0.0	+ .0002	
27	0.0	- .0001	+ .0007		0.0	
28	+ .0001	+ .0001	+ .0003		+ .0001	
29	+ .0001	0.0	- .0006	0.0	- .0001	
30	+ .0002	+ .0001	0.0	+ .0001	0.0	0.0
31	- .0005	- .0001	- .0039	+ .0244	+ .0023	- .0031
32	+ .0005	- .0002	- .0033	+ .0211	+ .0019	- .0022
33	- .0118	- .0020	- .0051	+ .0133	+ .0024	- .0022
34	0 .0164	- .0026	- .0019	+ .0156	+ .0006	- .0014
35	+ .0003	+ .0003	- .0010	- .0001	+ .0002	- .0001

K·E 10 X 10 TO THE CENTIMETER 46 1517
KEUFFEL & ESSER CO.

TABLE V. - NOZZLE CALIBRATION CURVES

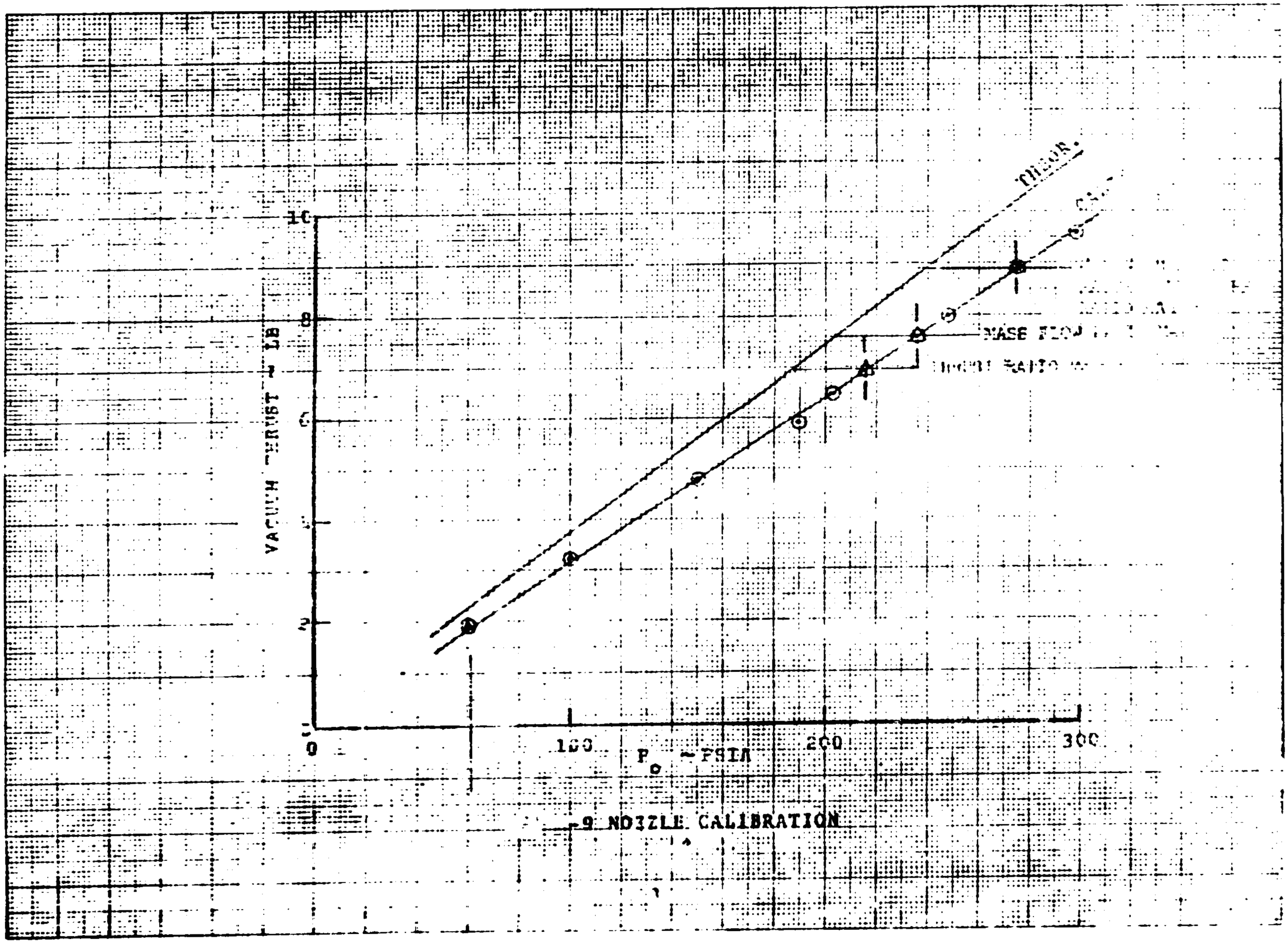
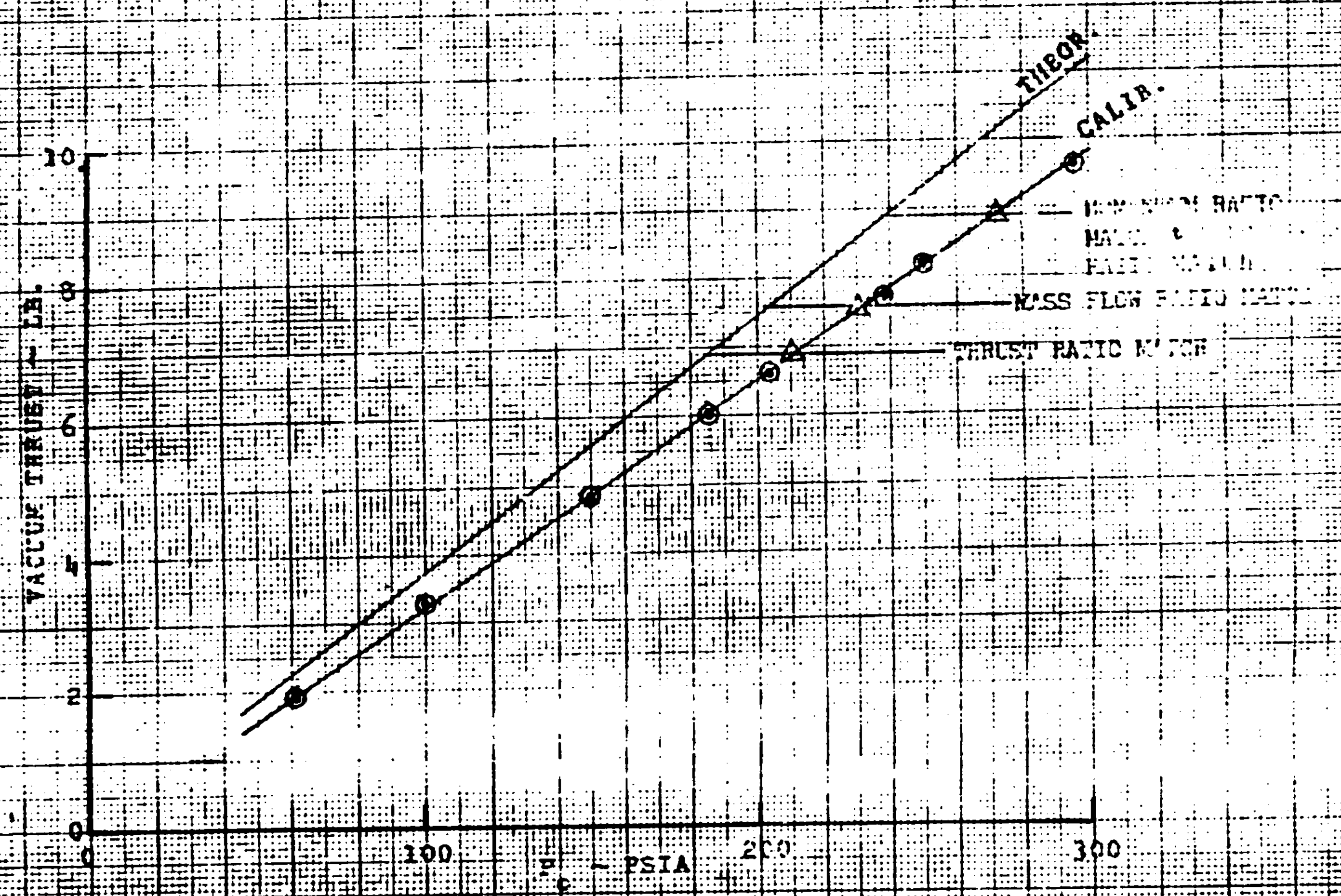


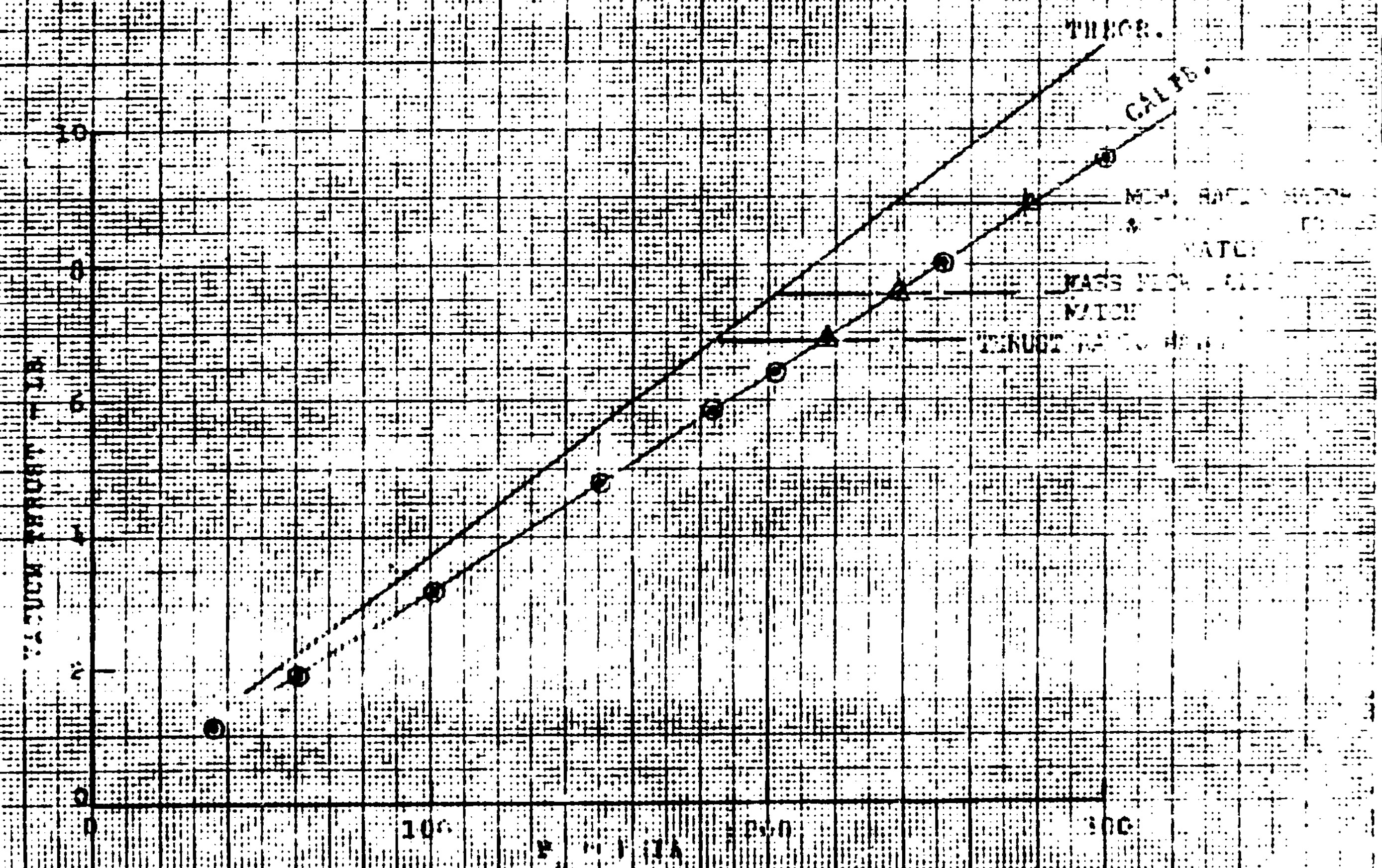
TABLE V. - Continued.



(B) -11 NOZZLE CALIBRATION

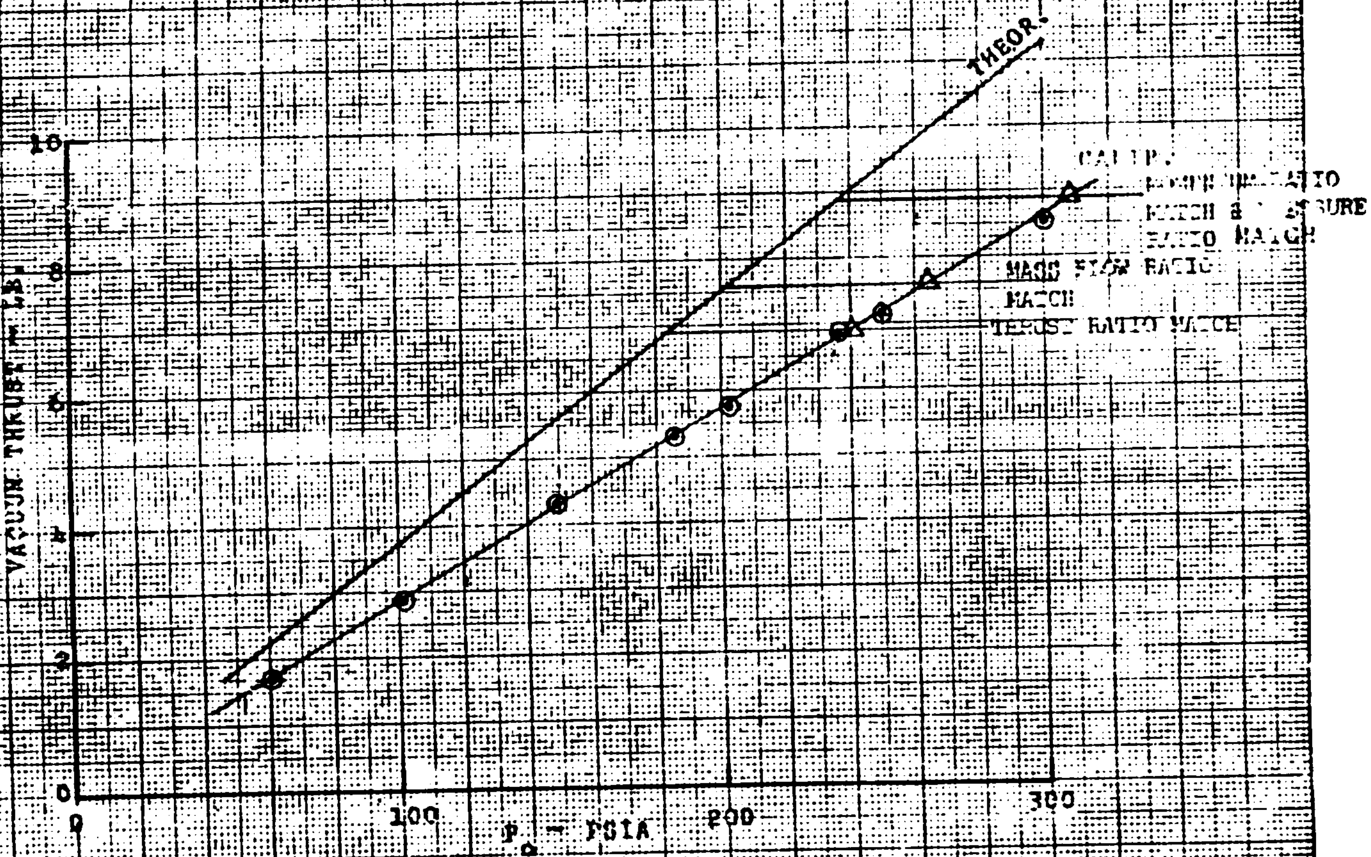
K+E 10 X 10 TO THE CENTIMETER 46 1517

TABLE V. - Continued.



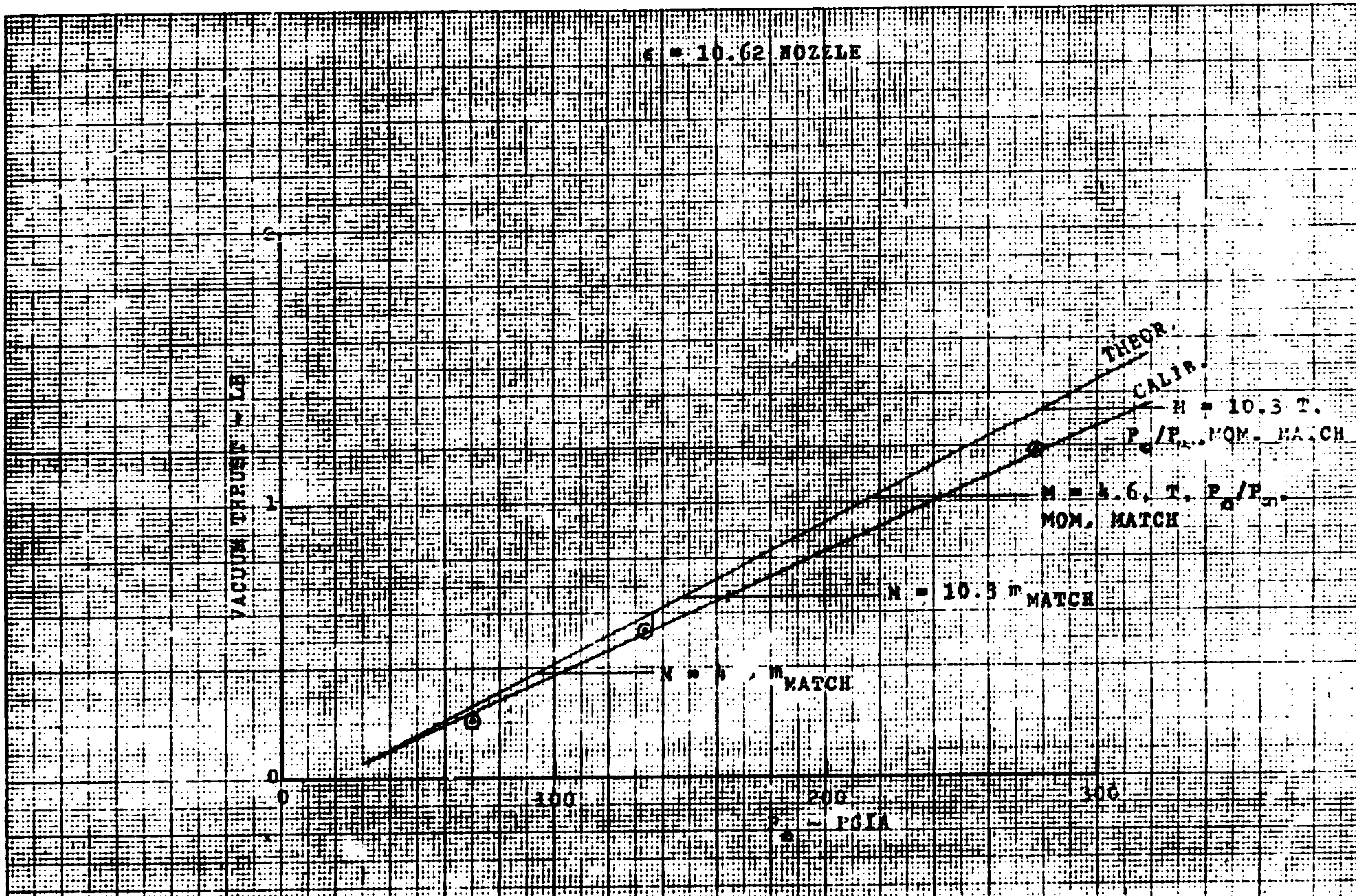
(C) -11 NOZZLE CALIBRATION

TABLE V. - Continued.



(D) -15 NOZZLE CALIBRATION

TABLE V. - Concluded.



(E) ε10 NOZZLE CALIBRATION

Notes:

1. Positive directions of force cofficients, moment coefficients, and angles are indicated by arrow
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

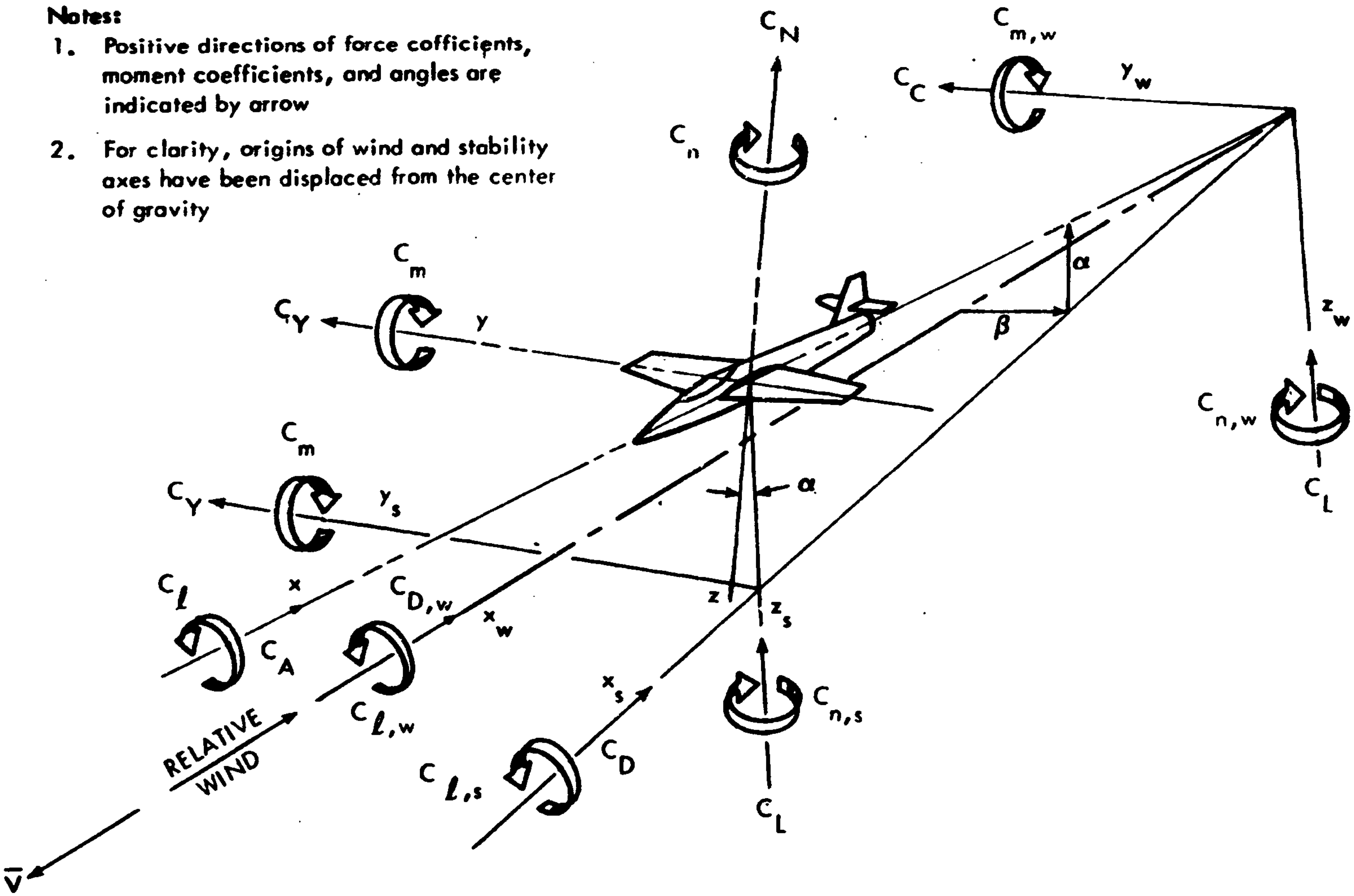
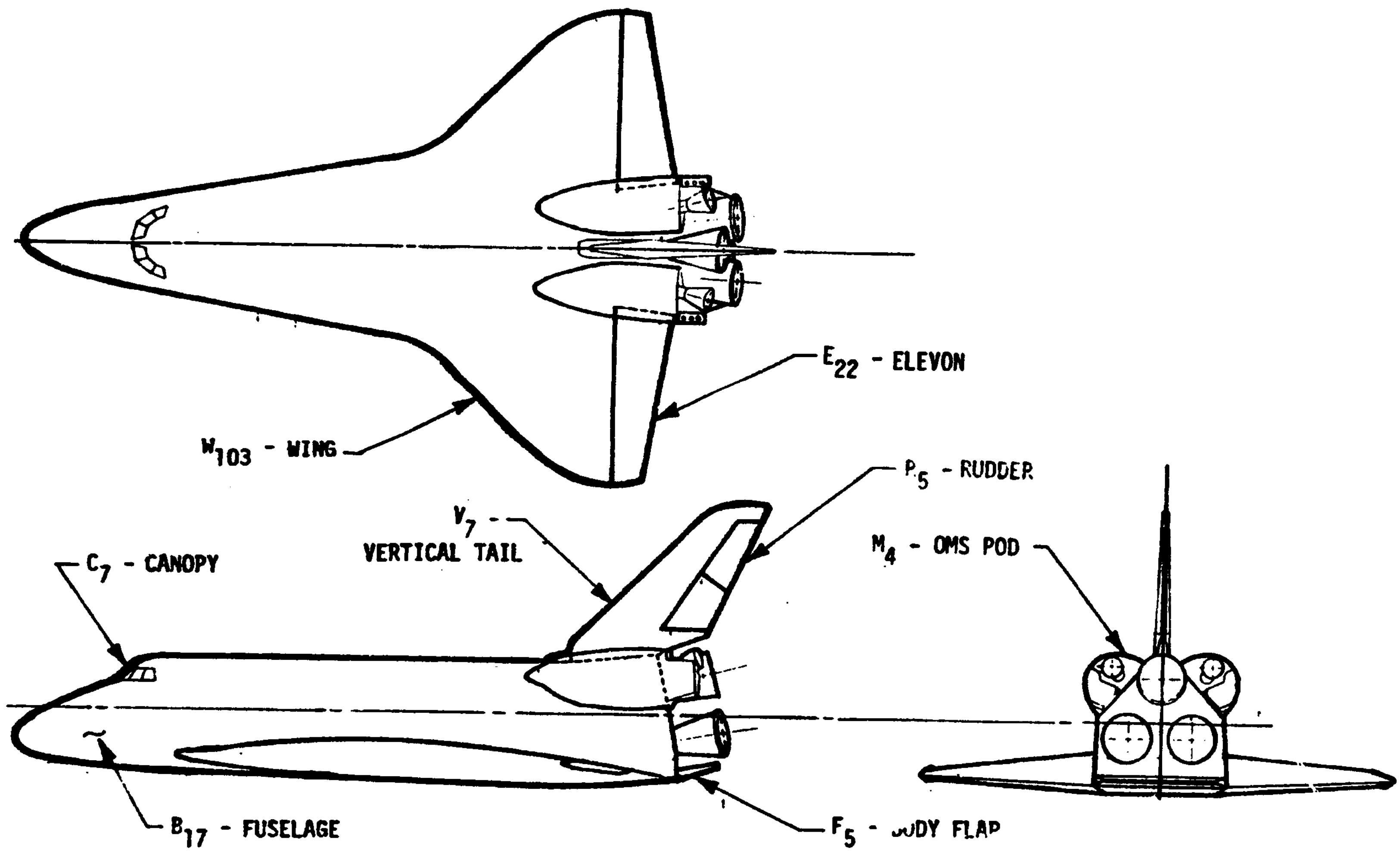
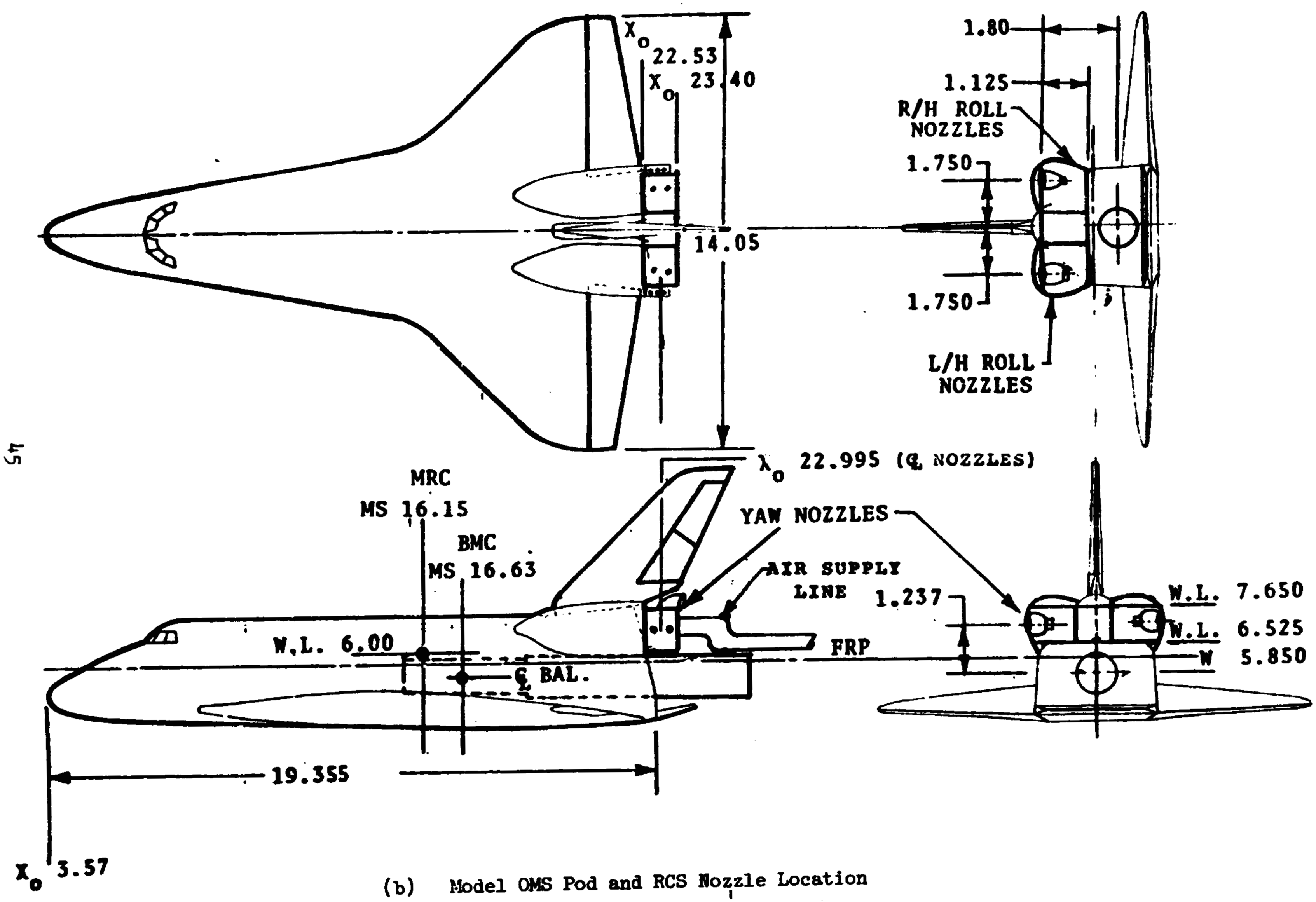


Figure 1. - Axis Systems.



(a) SSV Orbiter VL70-000139B Model Nomenclature

Figure 2. - Model sketches.



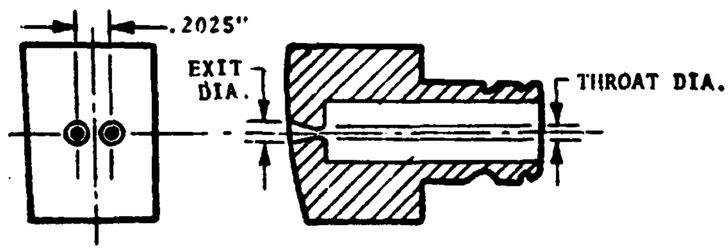
(b) Model OMS Pod and RCS Nozzle Location

Figure 2. - Continued.

YAW CONFIGURATION

DASH NO.	NO. OF NOZZLES	THROAT DIA. (IN.)	THROAT AREA (IN.^{2})	EXIT DIA. (IN.)	EXIT AREA (IN.^{2})	EXPANSION RATIO	NOTES
-19	2	0.0437	0.00151	0.1440	0.01629	10.81	L/H FIRING NOZZLES SIMULATING M_∞ = 10.3 FLIGHT CONDITIONS
-20	2	0.1338	0.01405	0.1440	0.01629	1.159	SIMULATING M_∞ = 28.3 FLIGHT CONDITIONS

TWIN NOZZLE L/H FIRING

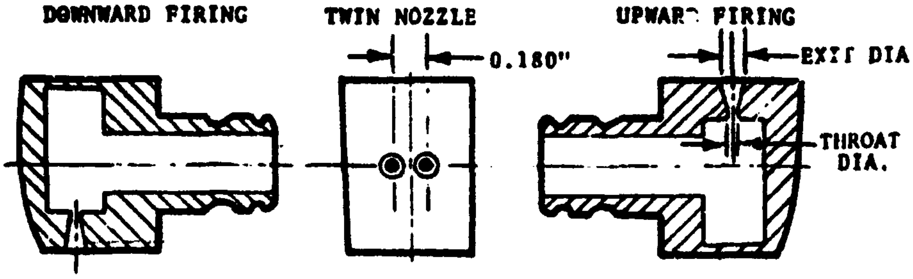


ROLL CONFIGURATION

DASH NO.	NO. OF NOZZLES	THROAT DIA. (IN.)	THROAT AREA (IN.^{2})	EXIT DIA (IN.)	EXIT AREA (IN.^{2})	EXPANSION RATIO	NOTES
-21	2	0.1338	0.01405	0.1440	0.01629	1.159	DOWNWARD FIRING L/H NOZZLE CANTED 12° AFT & 20° OUTBOARD*
-22	2	0.1338	0.01405	0.1440	0.01629	1.159	DOWNWARD FIRING L/H NOZZLES POINTED STRAIGHT DOWN*
-23	2	0.1338	0.01405	0.1440	0.01629	1.159	UPWARD FIRING L/H NOZZLES POINTED STRAIGHT UP*

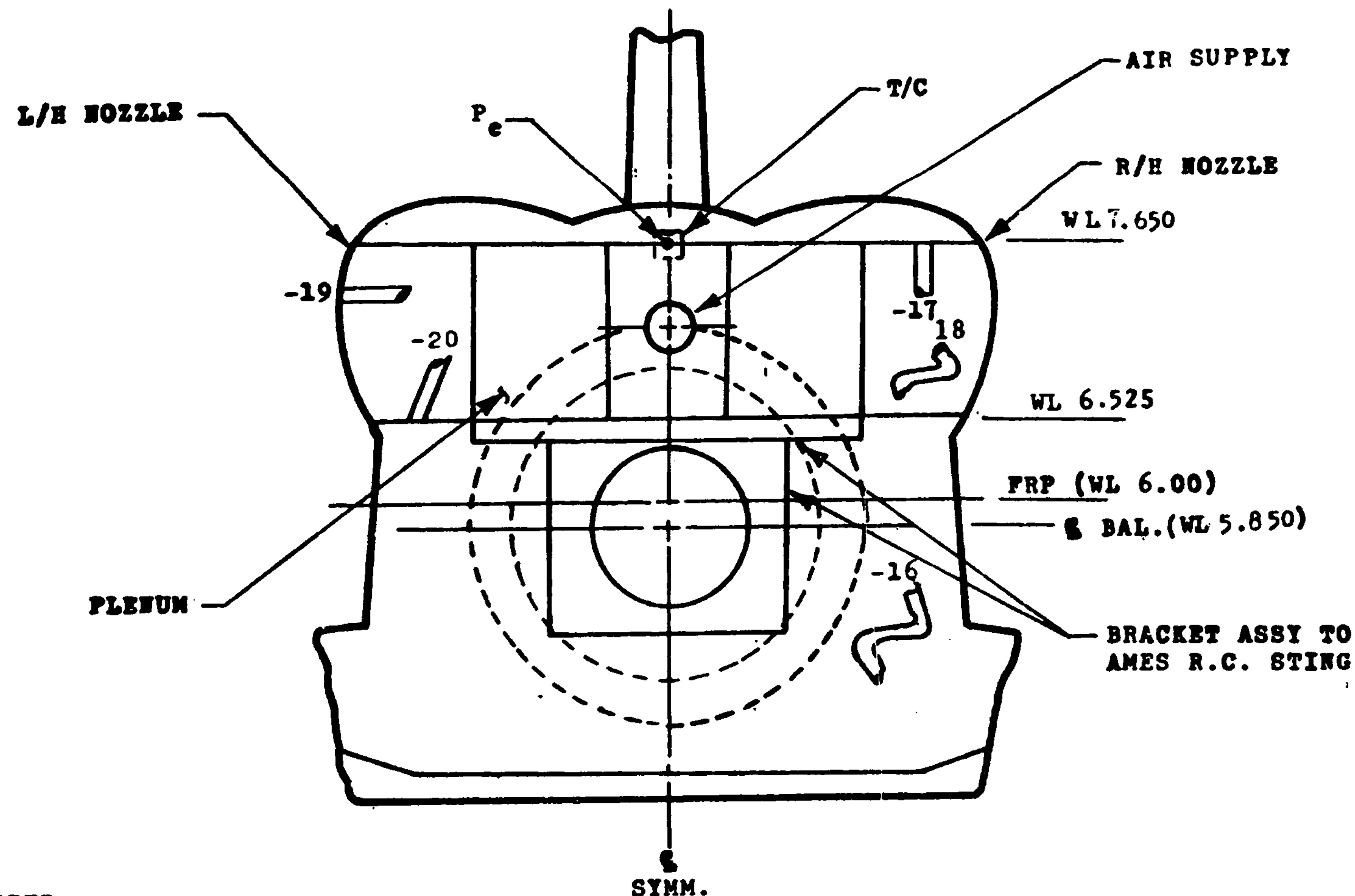
*SIMULATES M_∞ = 28.3 FLIGHT CONDITIONS

DOWNWARD FIRING TWIN NOZZLE UPWARD FIRING



(c) Details of RCS Nozzle Geometry

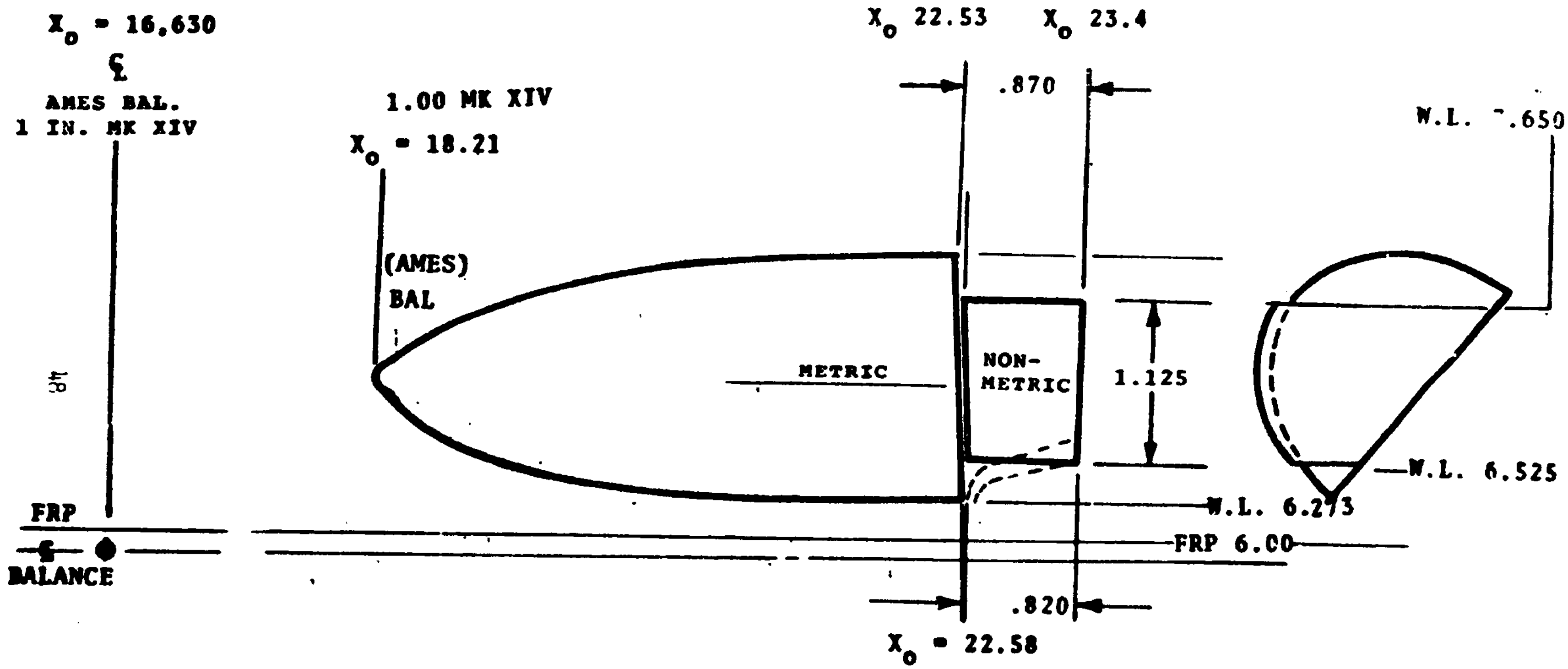
Figure 2. - Continued.



LEGEND:
- -16 MODEL BASE PRESSURE
- -17 R/H NOZZLE SURFACE PRESSURE
- -18 R/H NOZZLE BASE PRESSURE
- -19 L/H NOZZLE HORIZONTAL SURFACE PRESSURE
- -20 L/H NOZZLE LOWER SURFACE PRESSURE

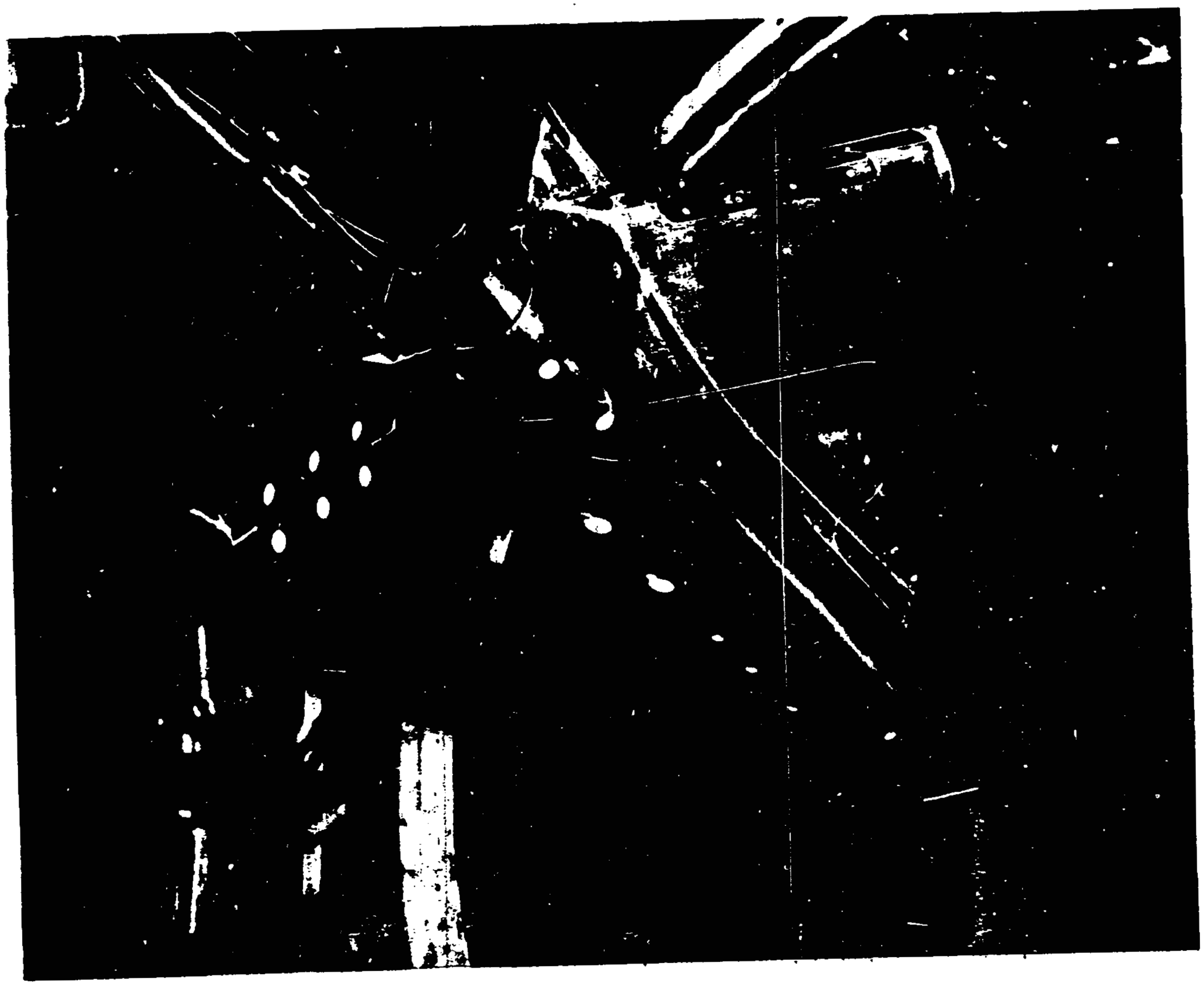
(d) Arrangement of Fuselage and RCS Plenum Base Pressures

Figure 2. - Continued.



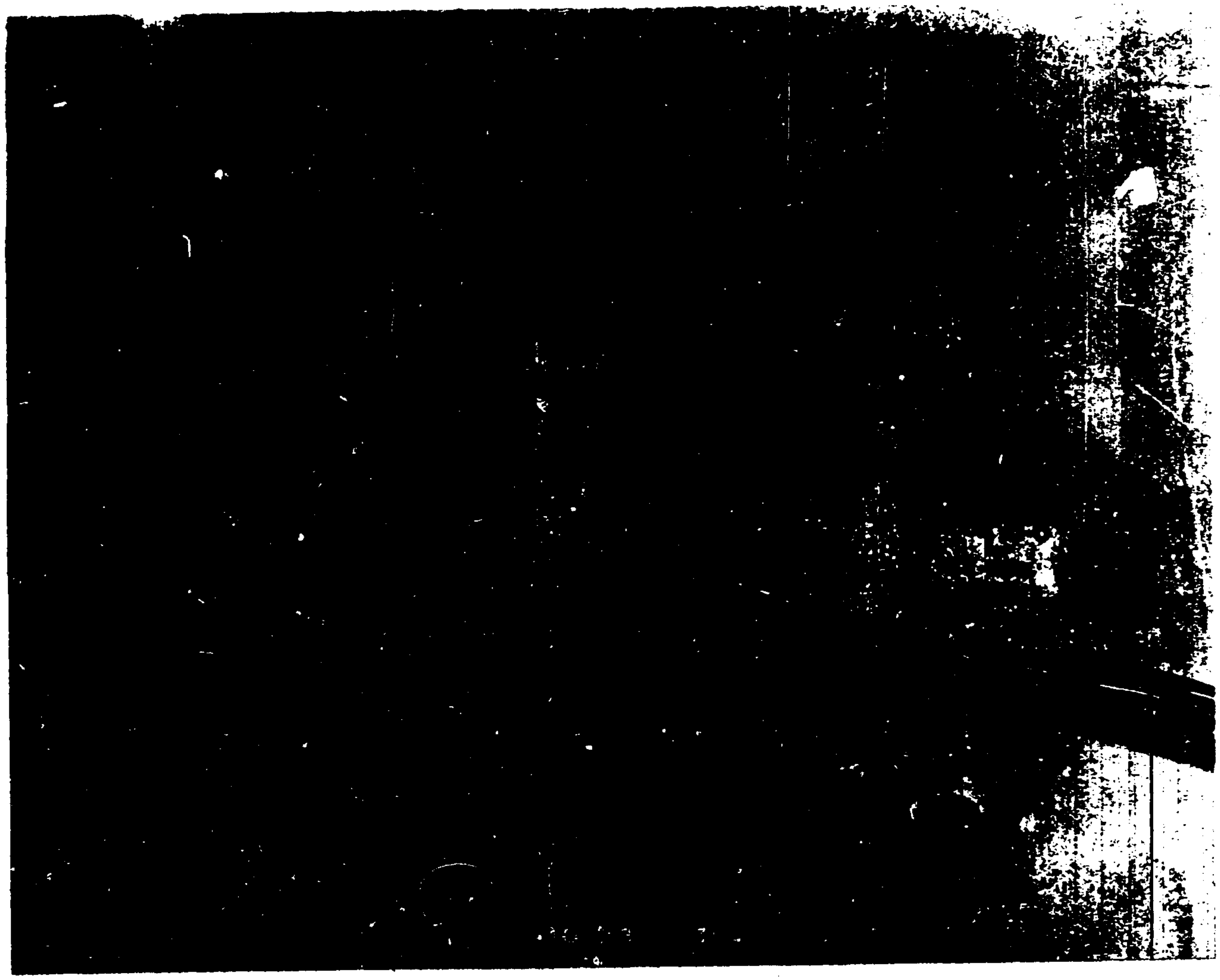
(e) M_6 OMS Pod

Figure 2. - Concluded.



(a) 0.015-scale orbiter model equipped with non-metric OMS pods in the Ames 3.5-Foot Hypersonic Wing Tunnel

Figure 3. - Installation photographs.



(b) RCS nozzles and related hardware

Figure 3. - Concluded.

DATA FIGURES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5ND1)	O	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-20.000	.000	40.000	275.000
(XB5F01)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-20.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

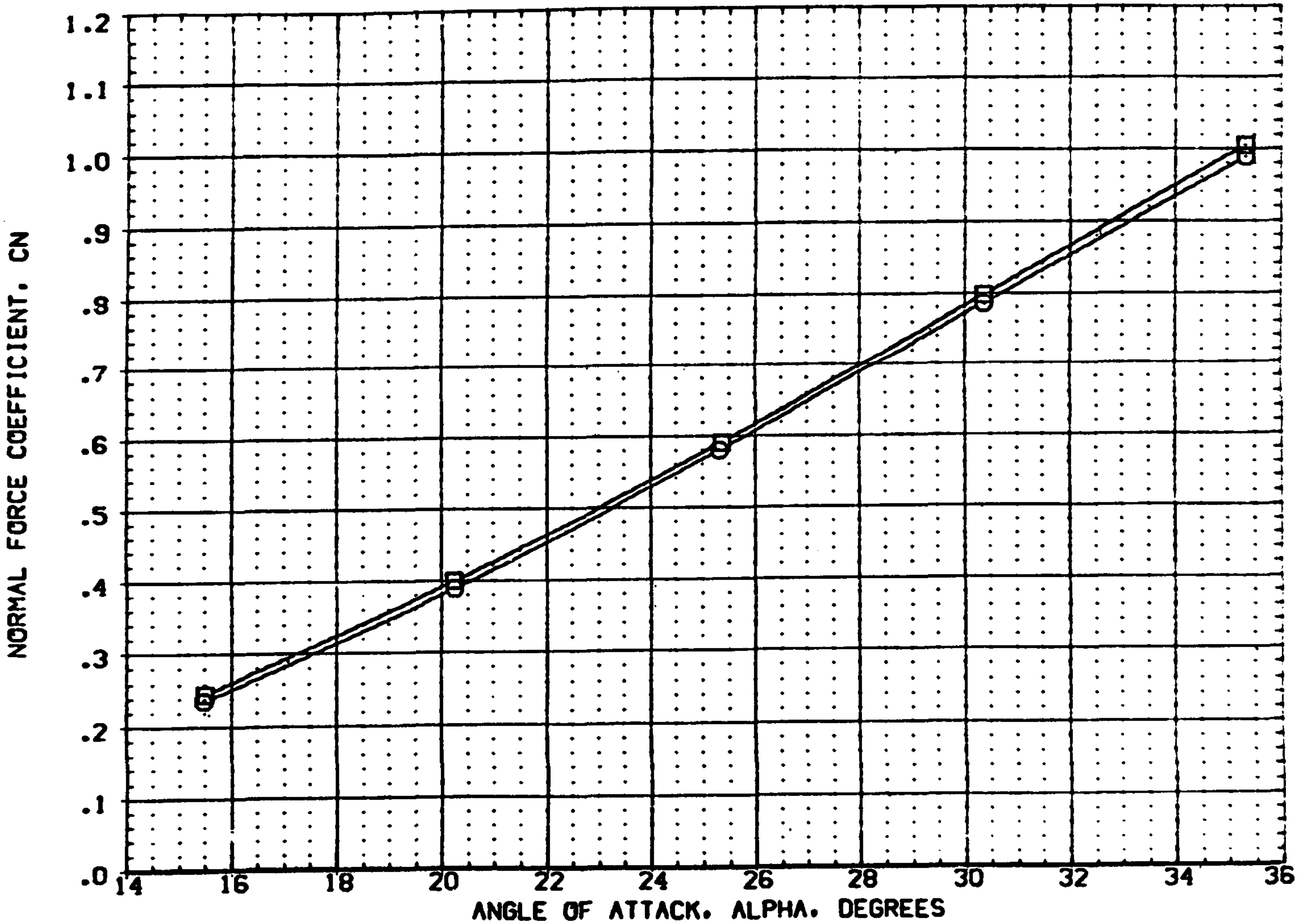


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

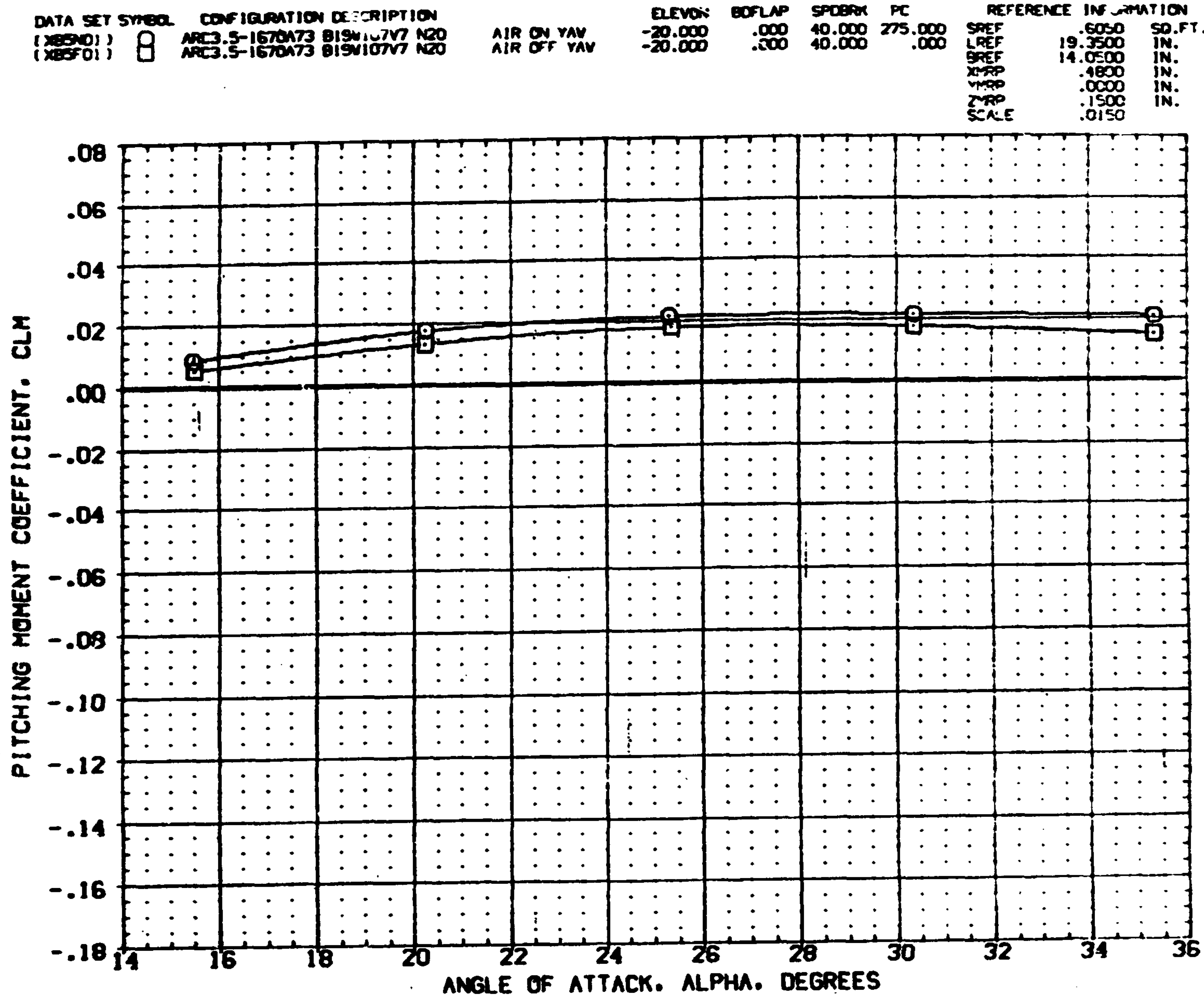


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N01)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-20.000	.000	40.000	275.000
(XB5F01)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-20.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

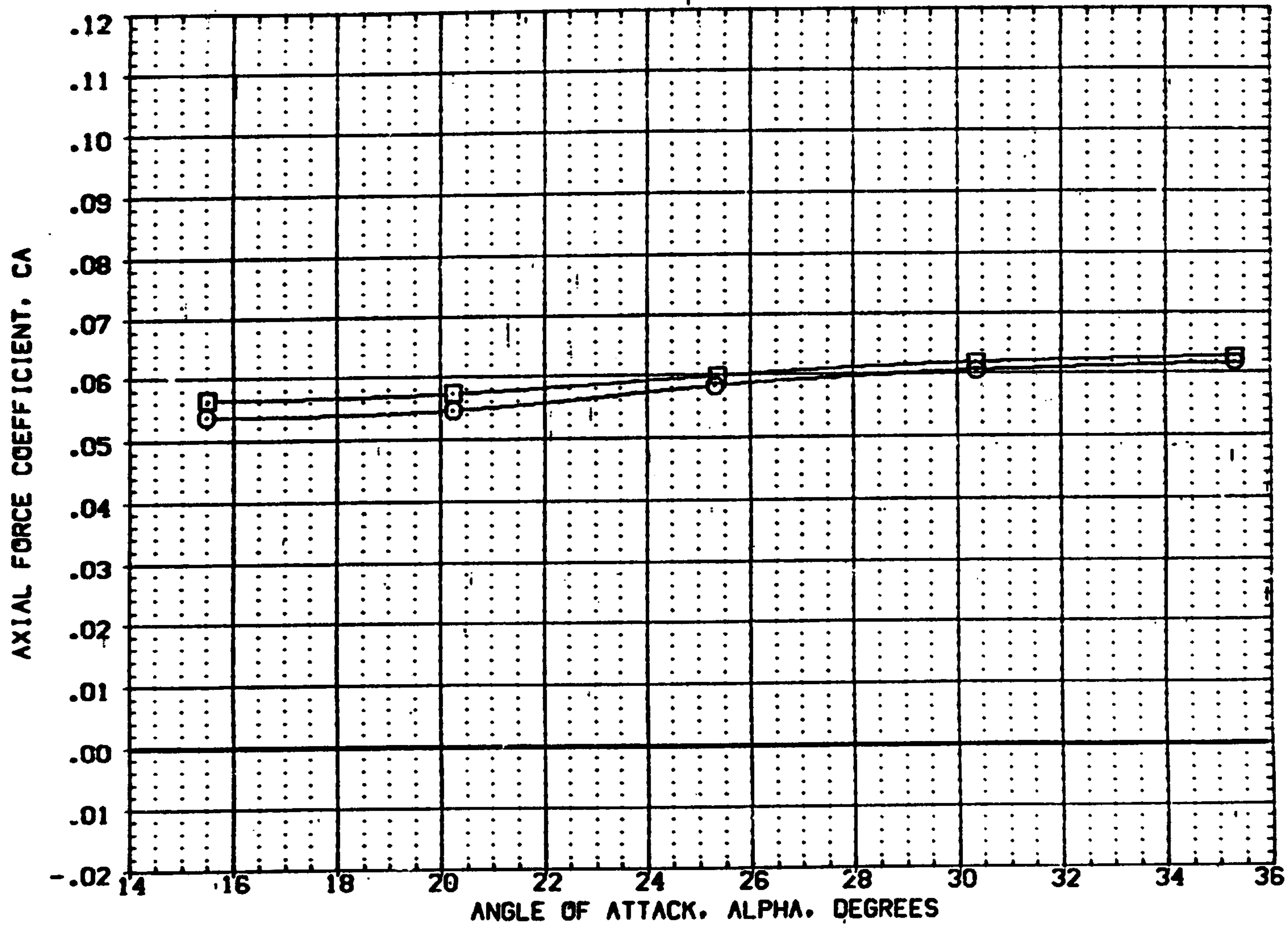


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

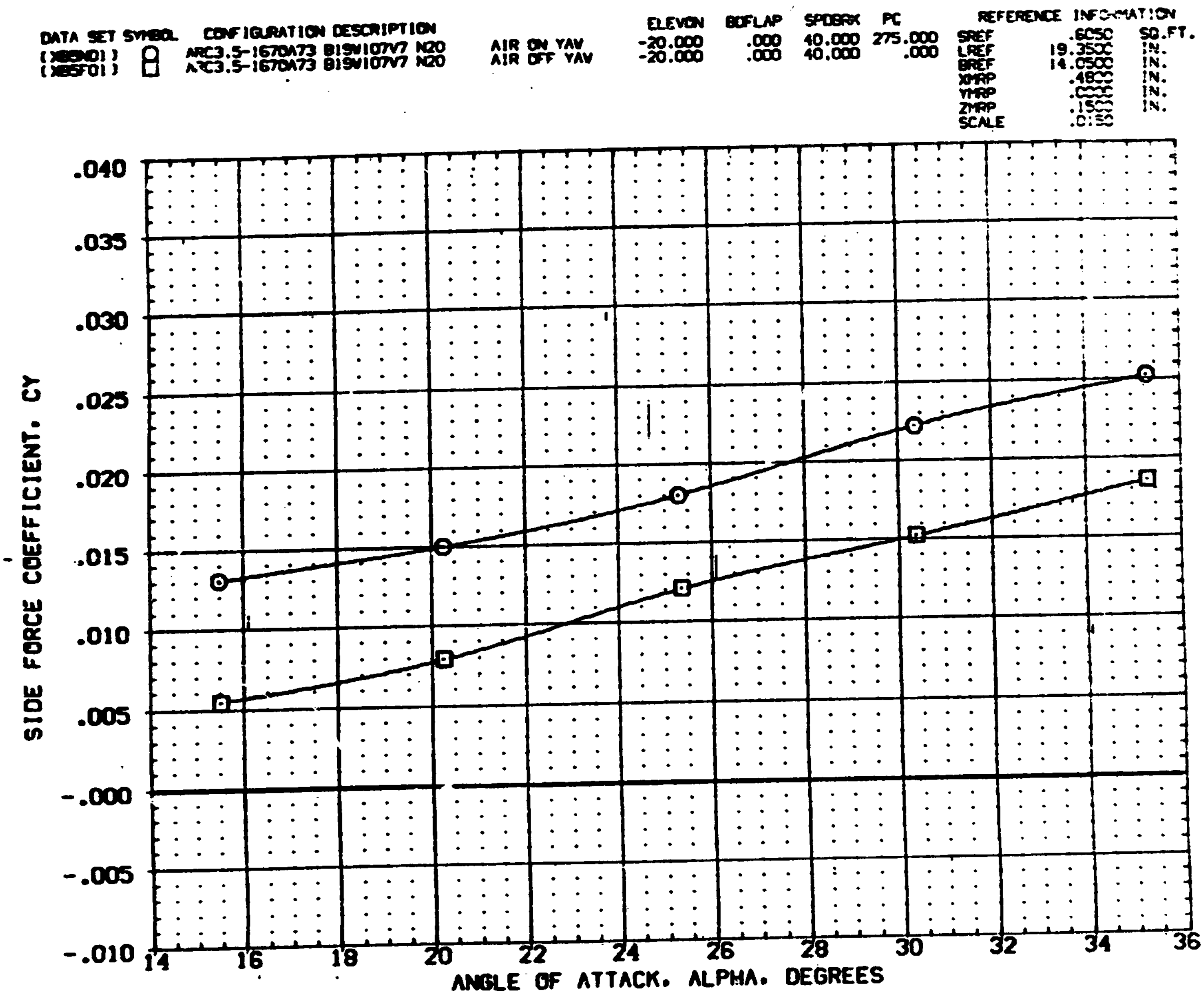


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XBSN01)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-20.000	.000	40.000	275.000
(XBSF01)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-20.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

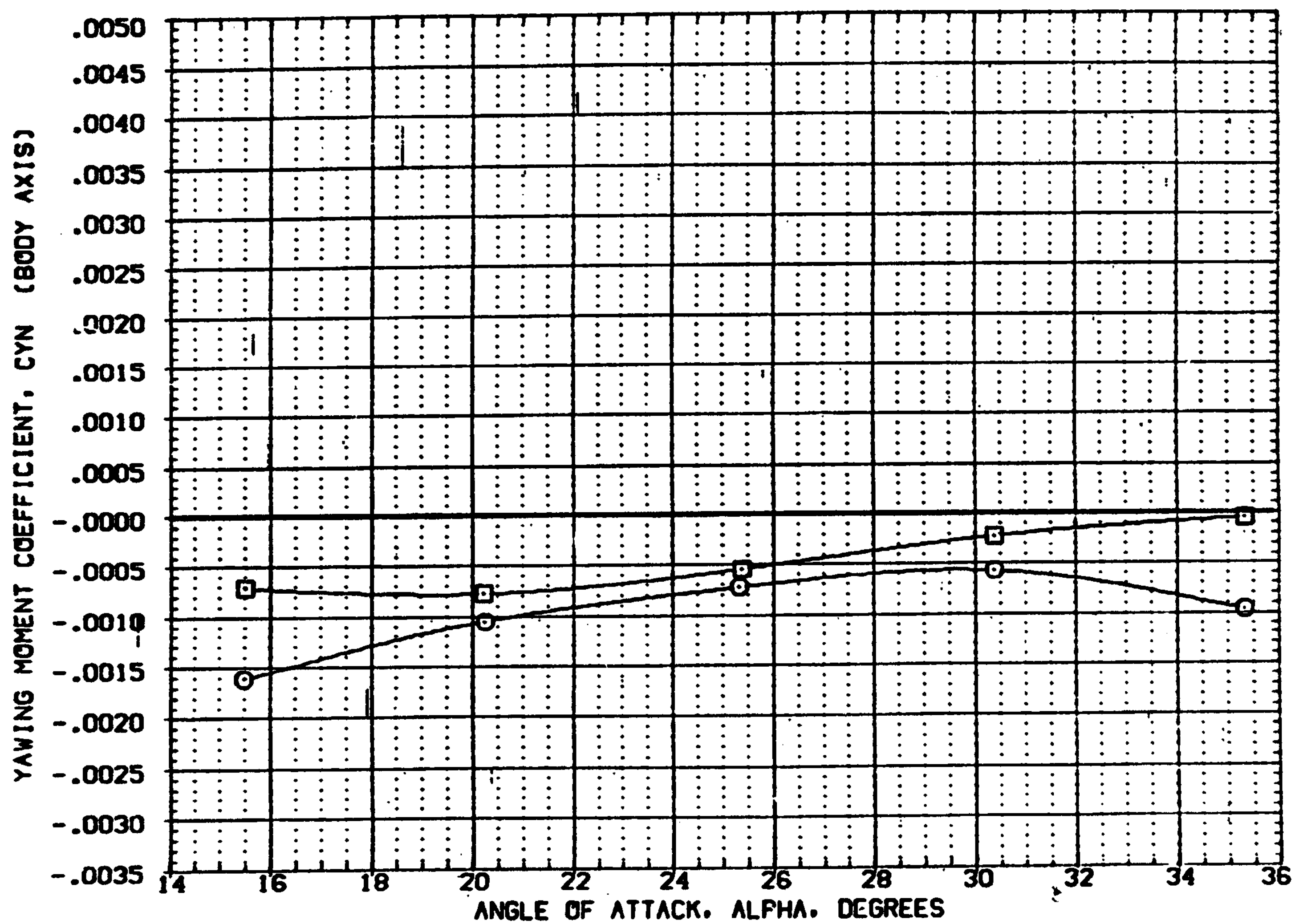


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

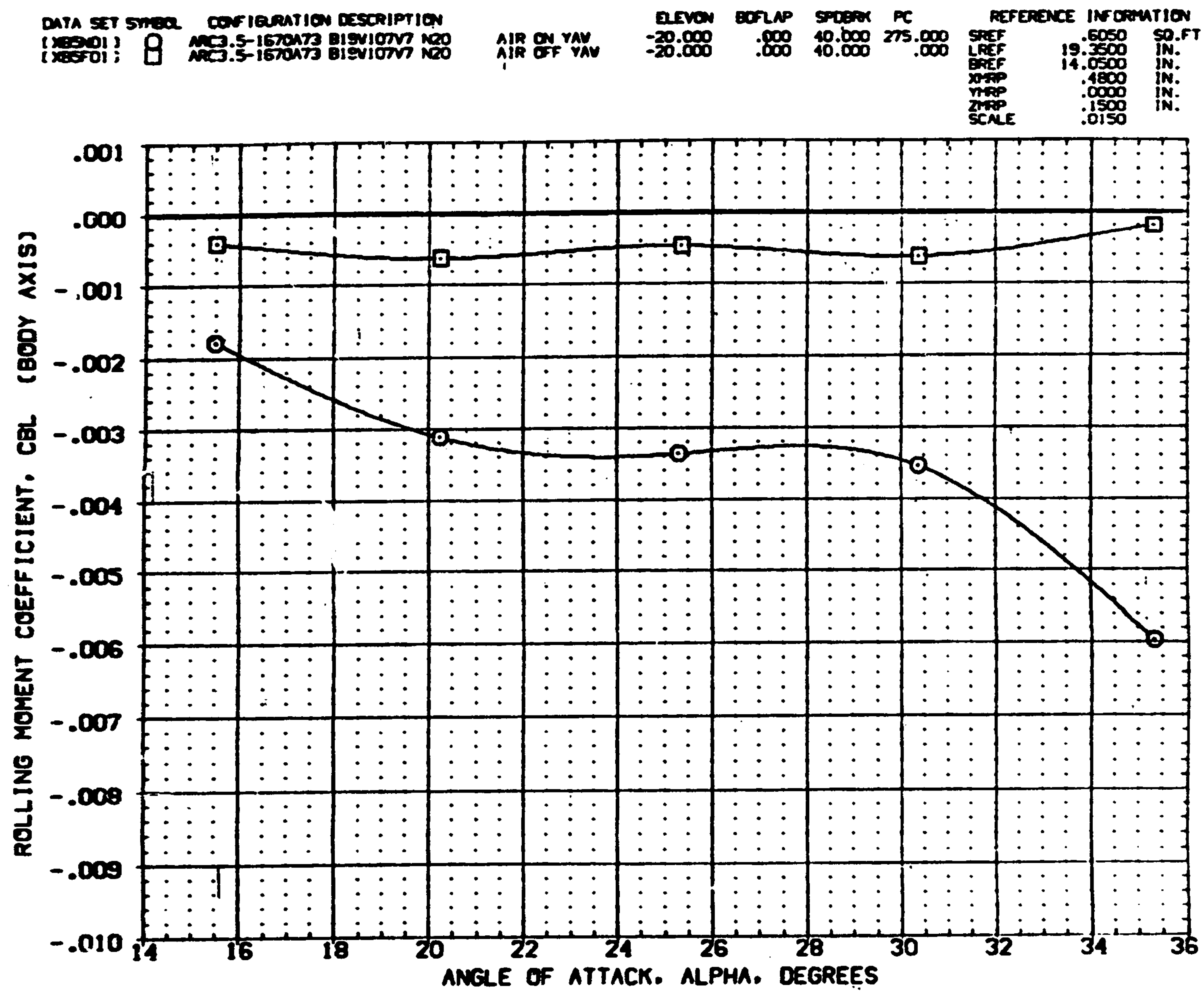


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N02)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	15.000	.000	40.000	275.000
(XB5F02)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	15.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

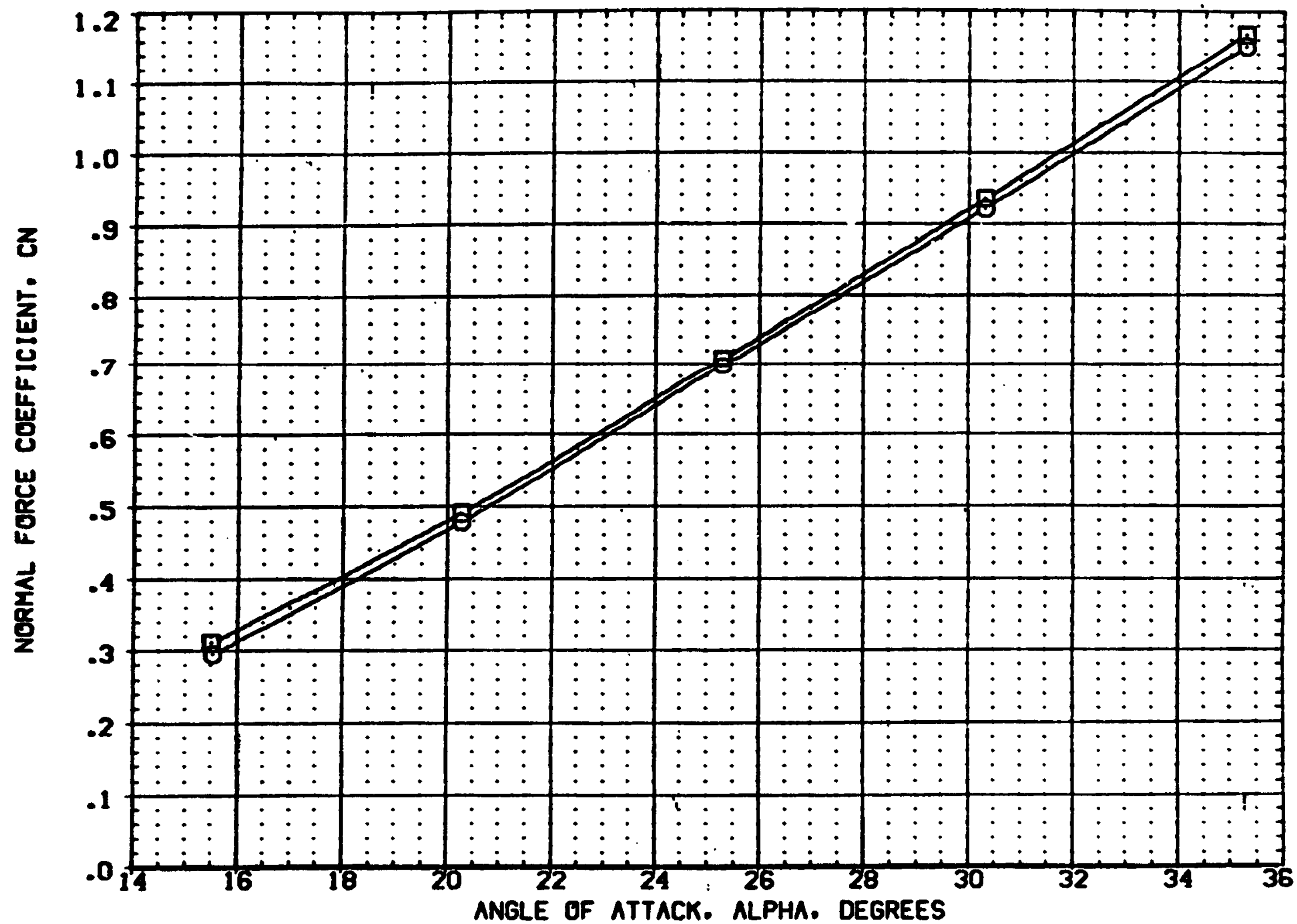


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N02)	○	ARC3.5-1670A73 B19W107V7 N20	AIR ON YAW	15.000	.000	40.000	275.000
(XB5F02)	□	ARC3.5-1670A73 B19W107V7 N20	AIR OFF YAW	15.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

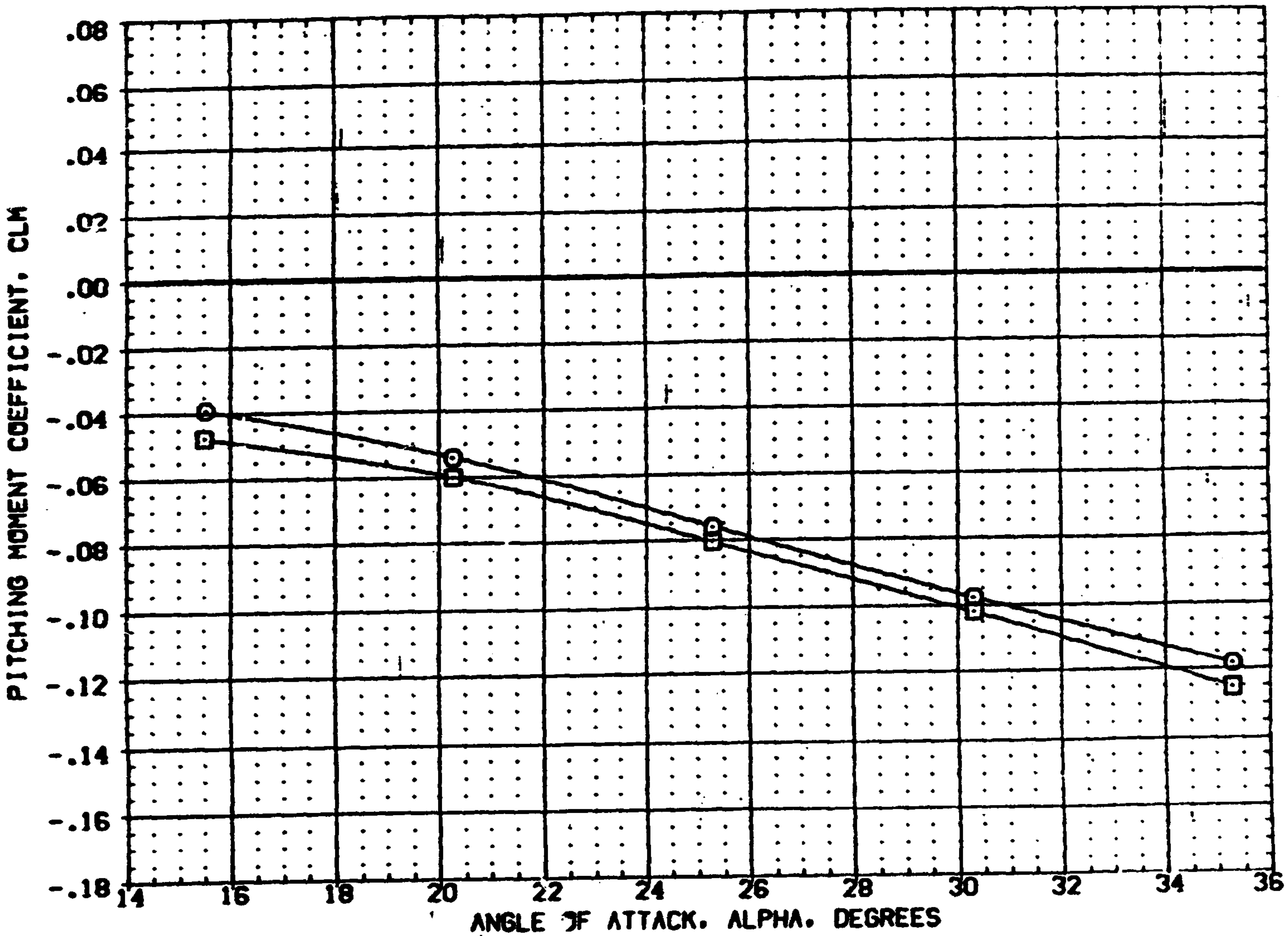


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

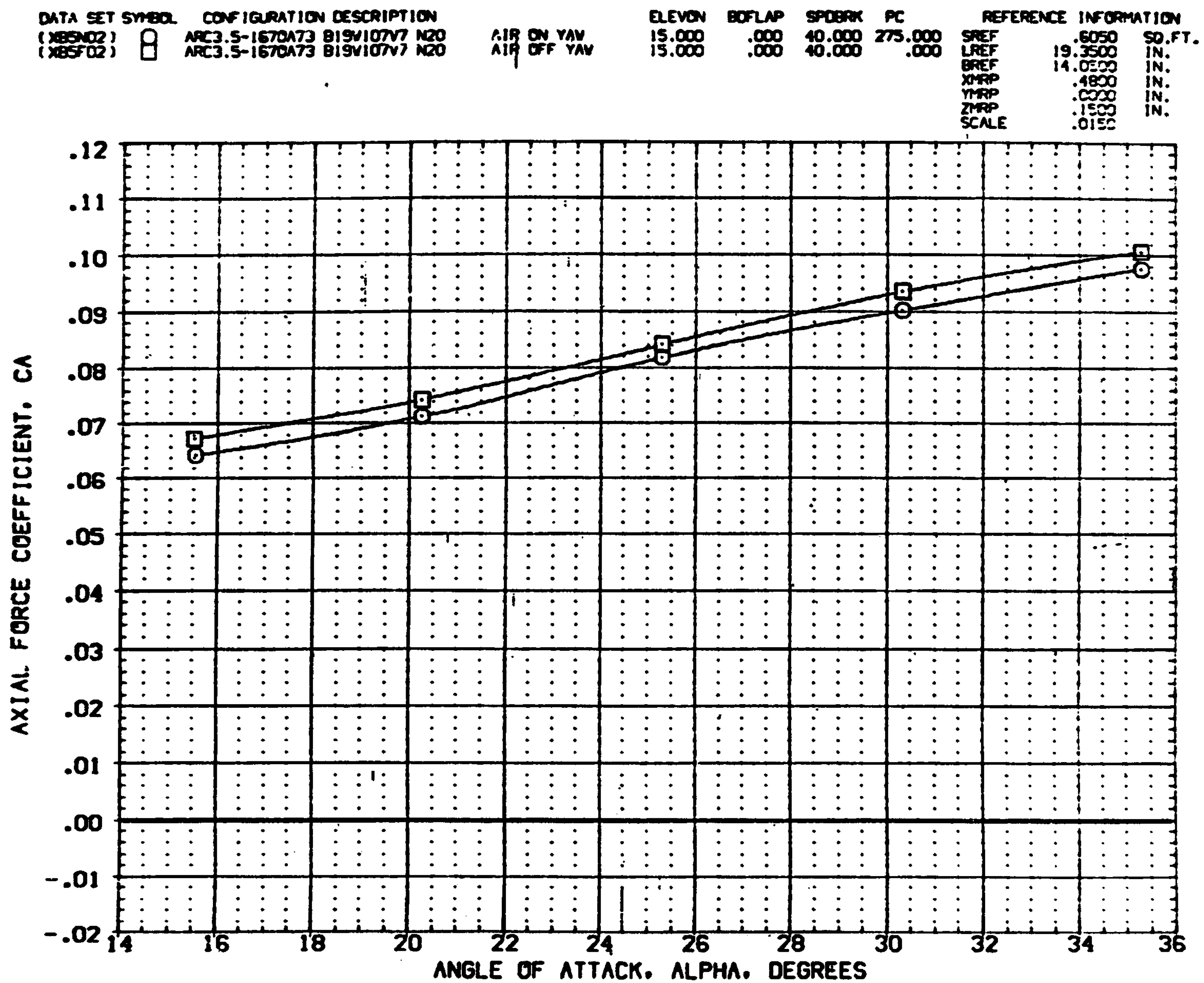


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N02)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	15.000	.000	40.000	275.000
(XB5F02)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	15.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

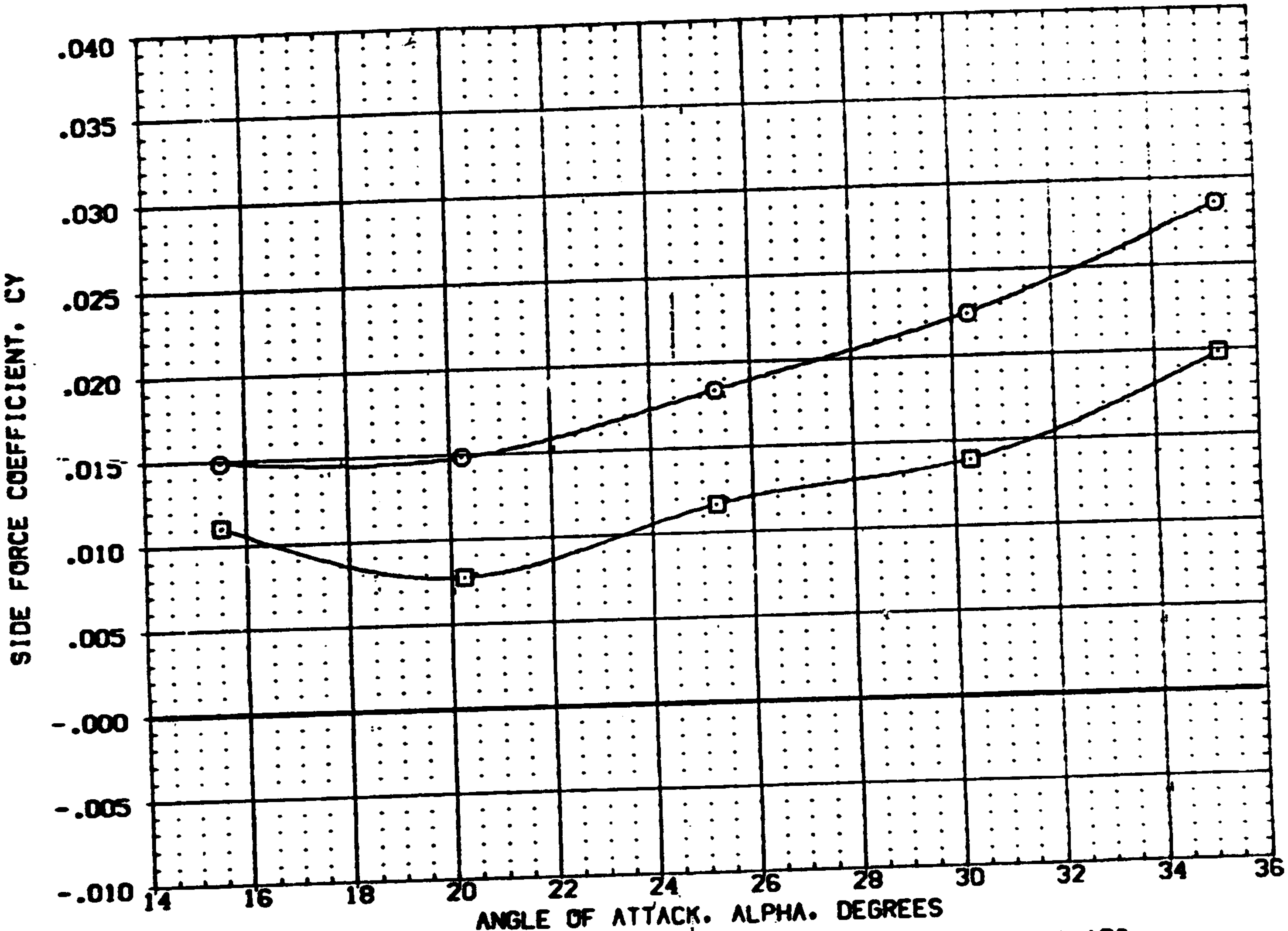


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N02)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	15.000	.000	40.000	275.000
(XB5F02)	□	ARC3.5-1570A73 B19V107V7 N20	AIR OFF YAW	15.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

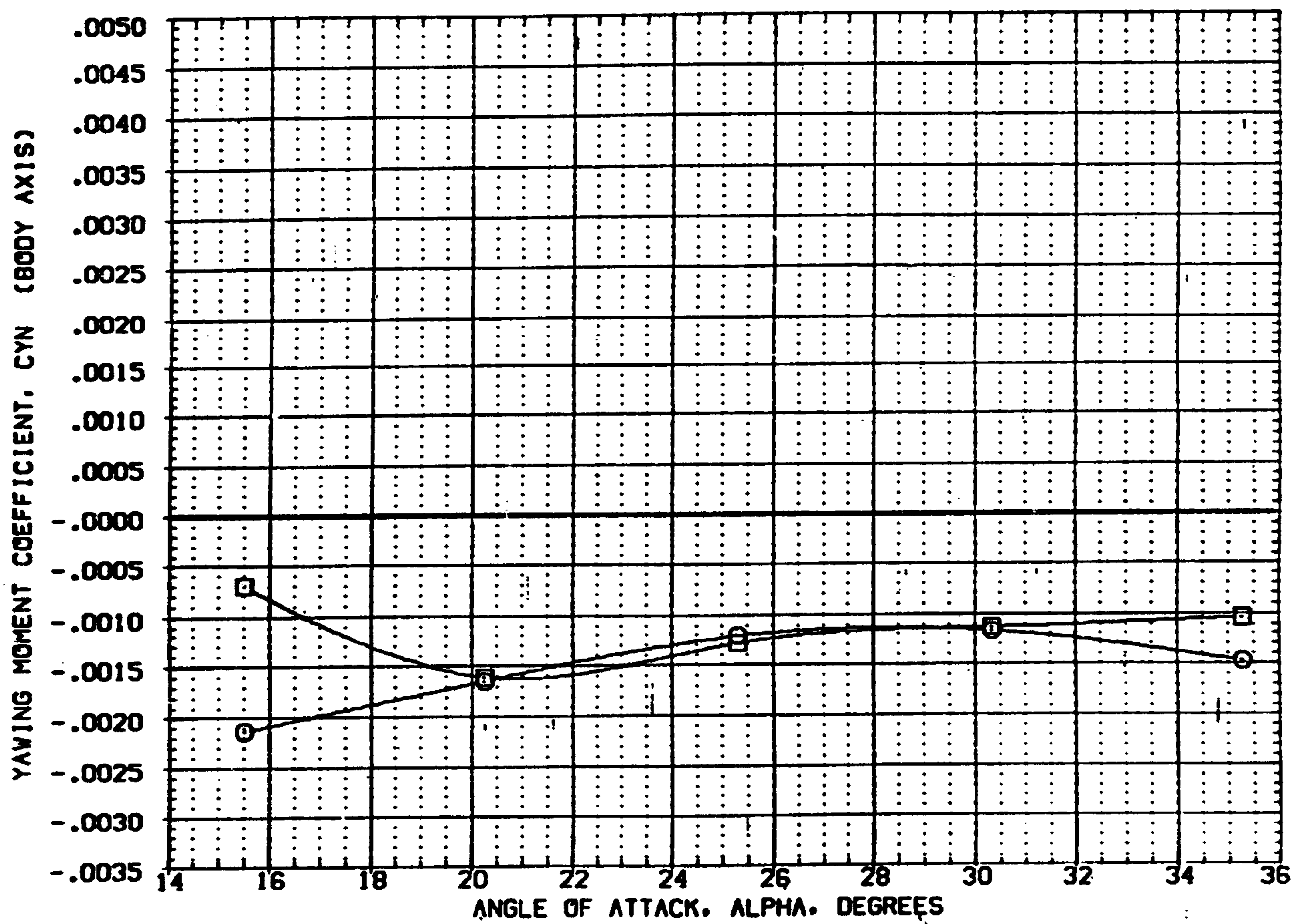


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

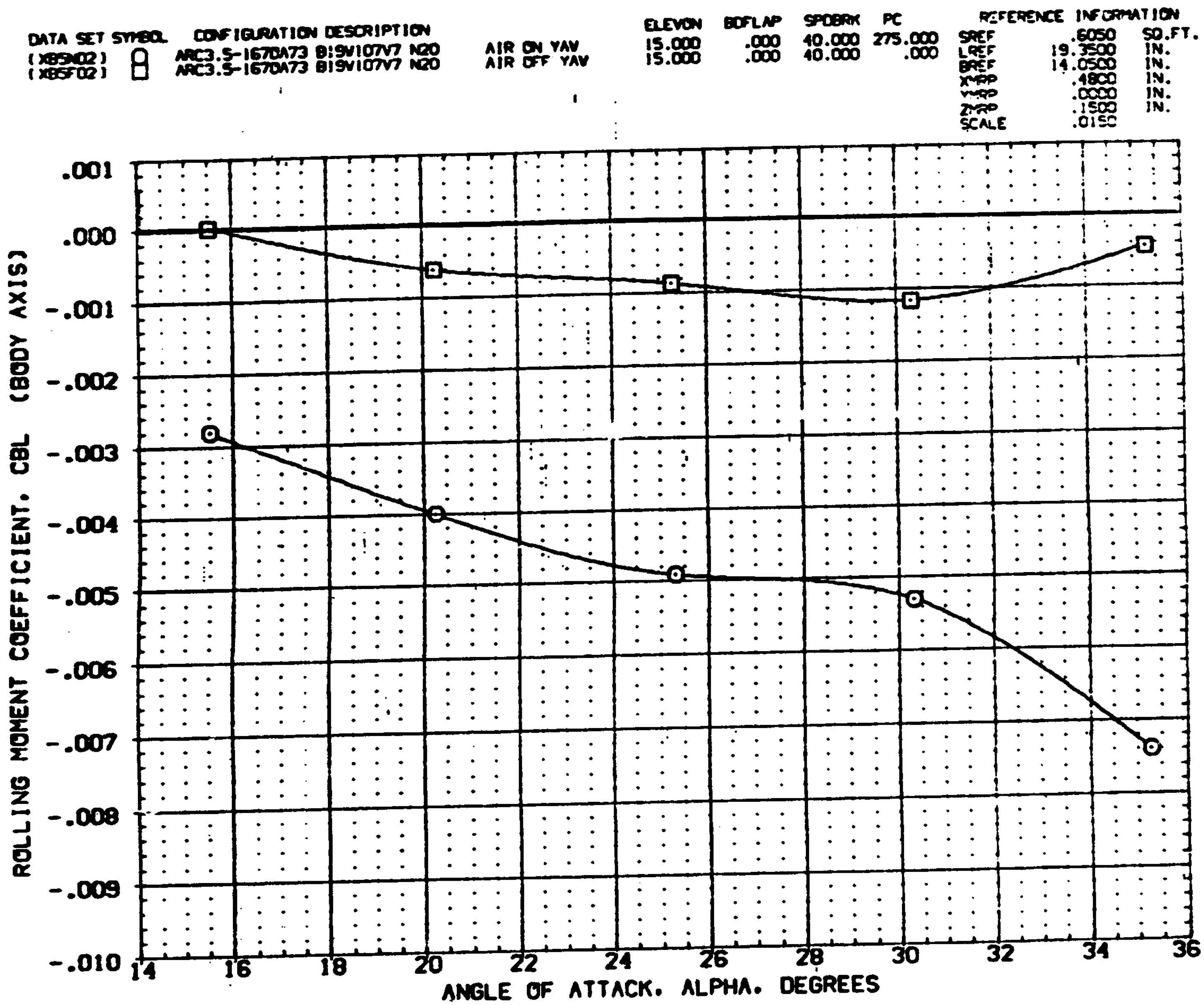


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N03)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-40.000	.000	40.000	275.000
(XB5F03)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-40.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

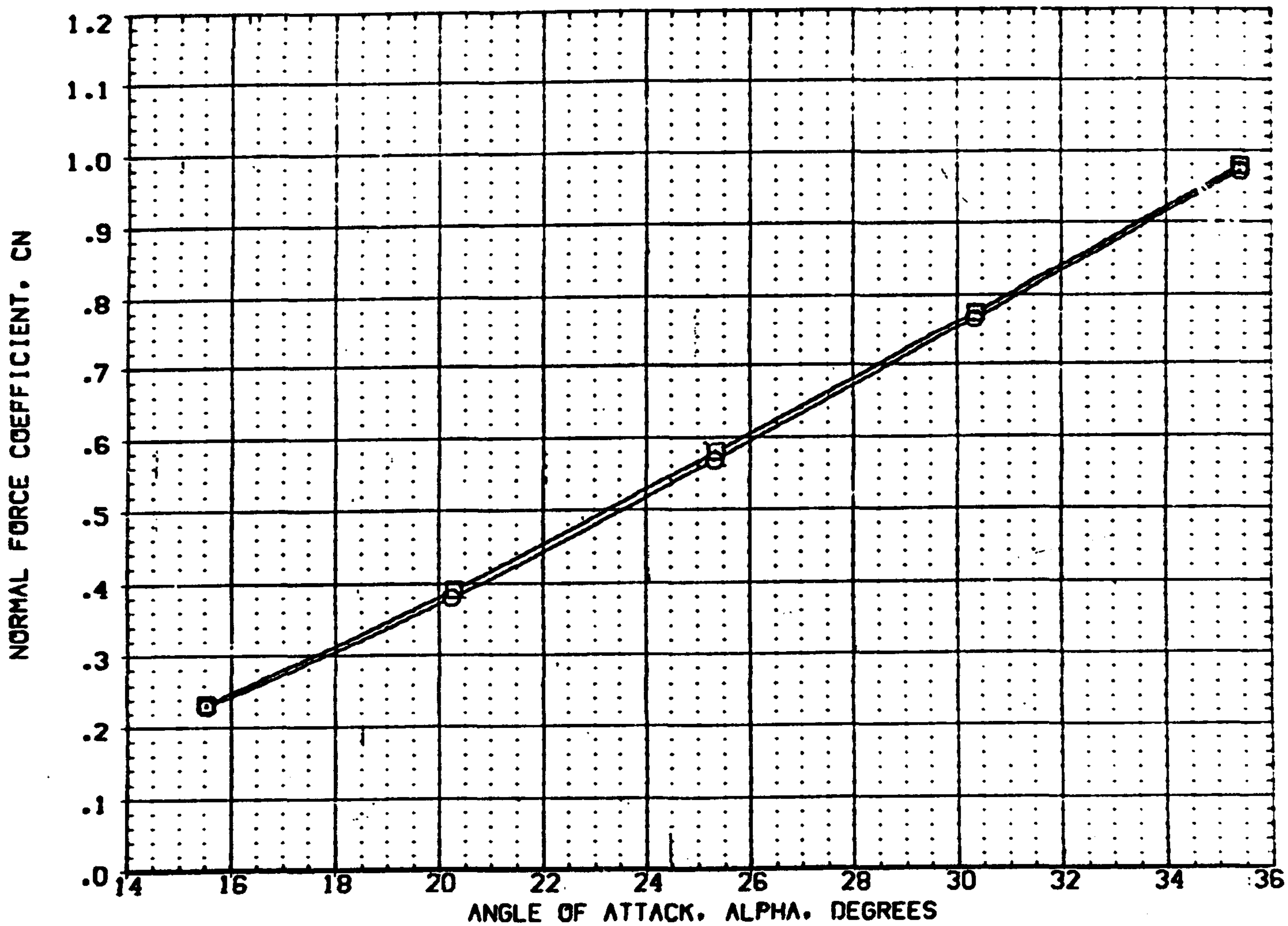


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N03)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-40.000	.000	40.000	275.000
(XB5F03)	⊡	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-40.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

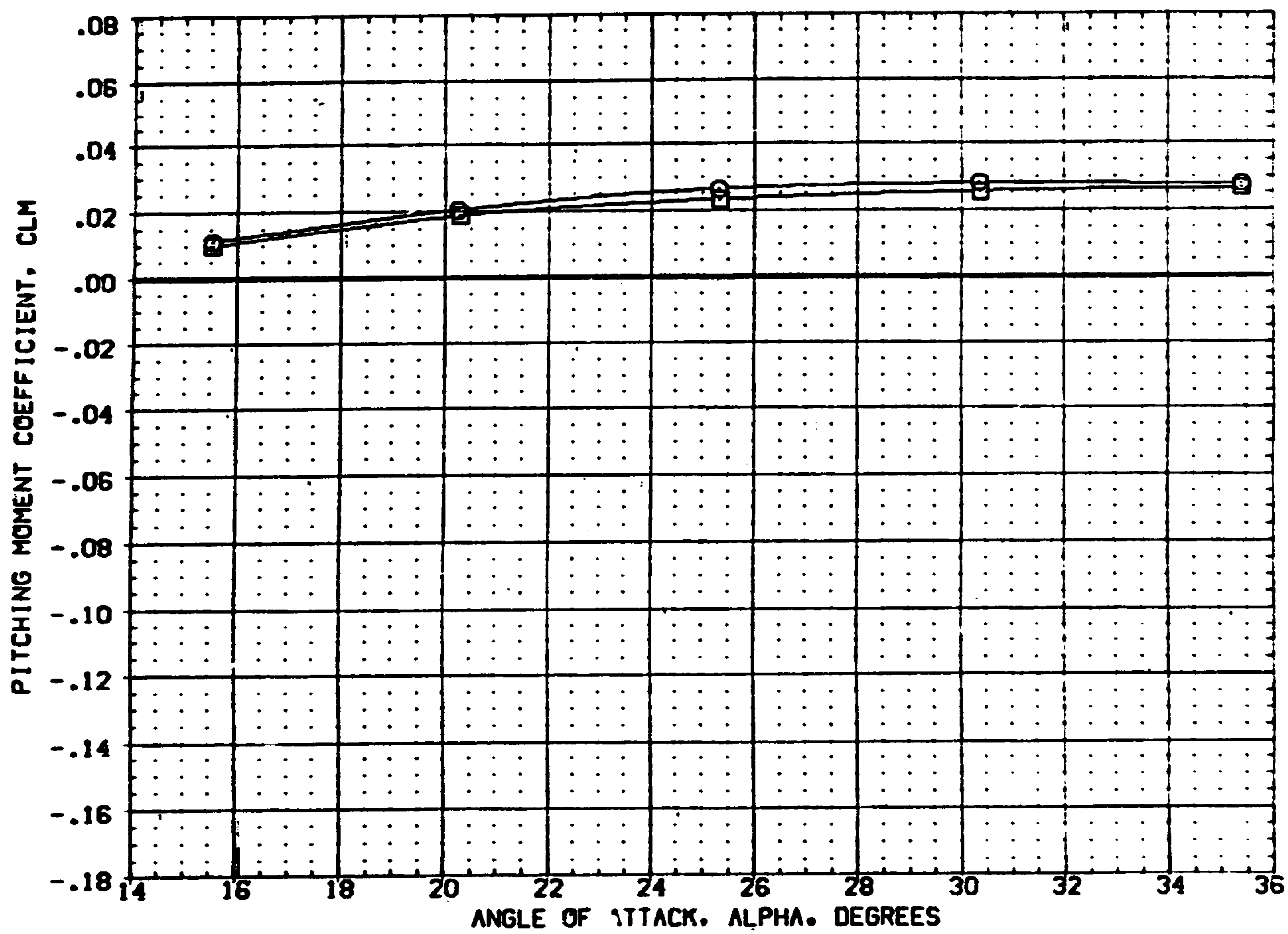


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

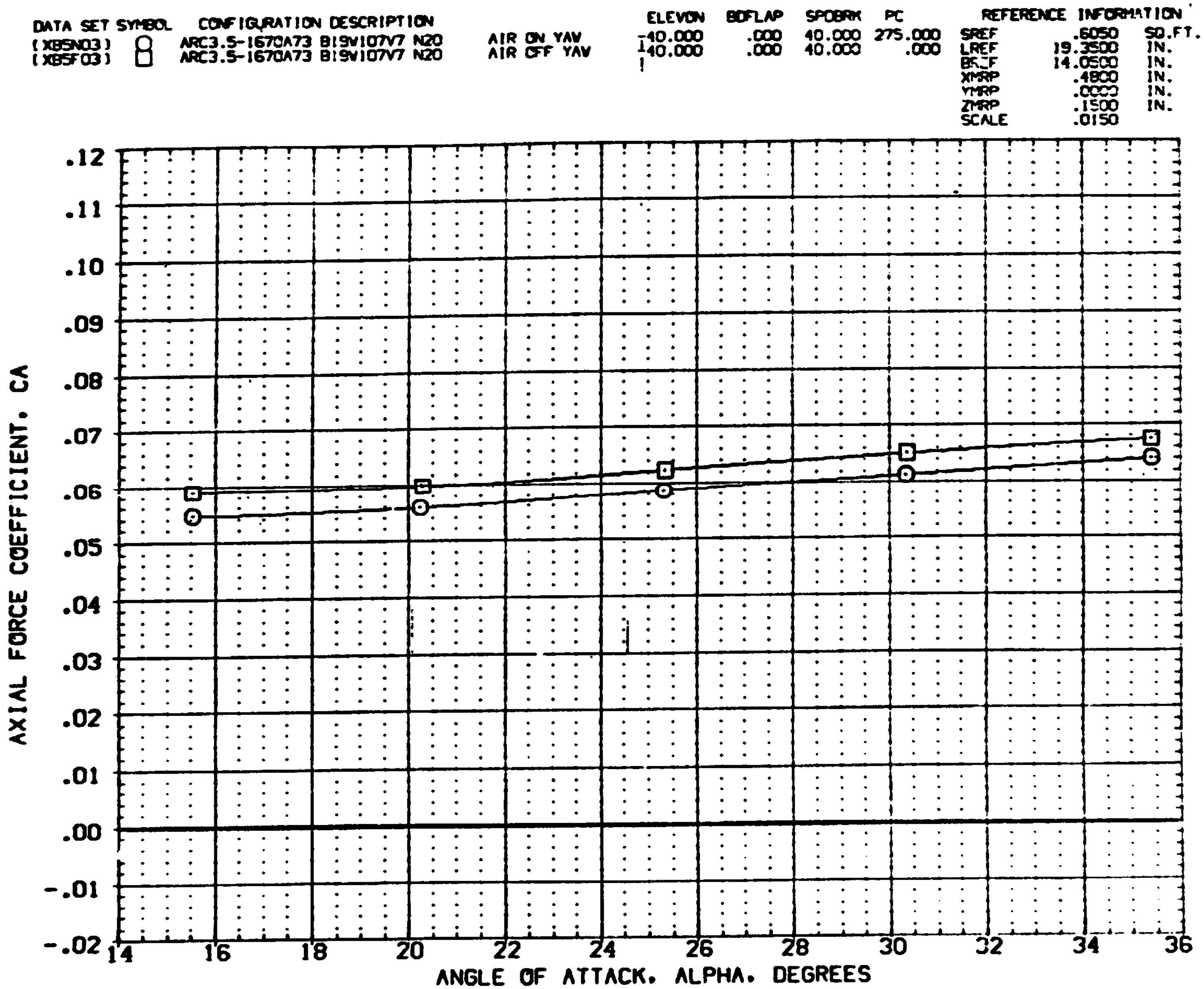


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N03)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-40.000	.000	40.000	275.000
(XB5F03)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-40.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.3500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

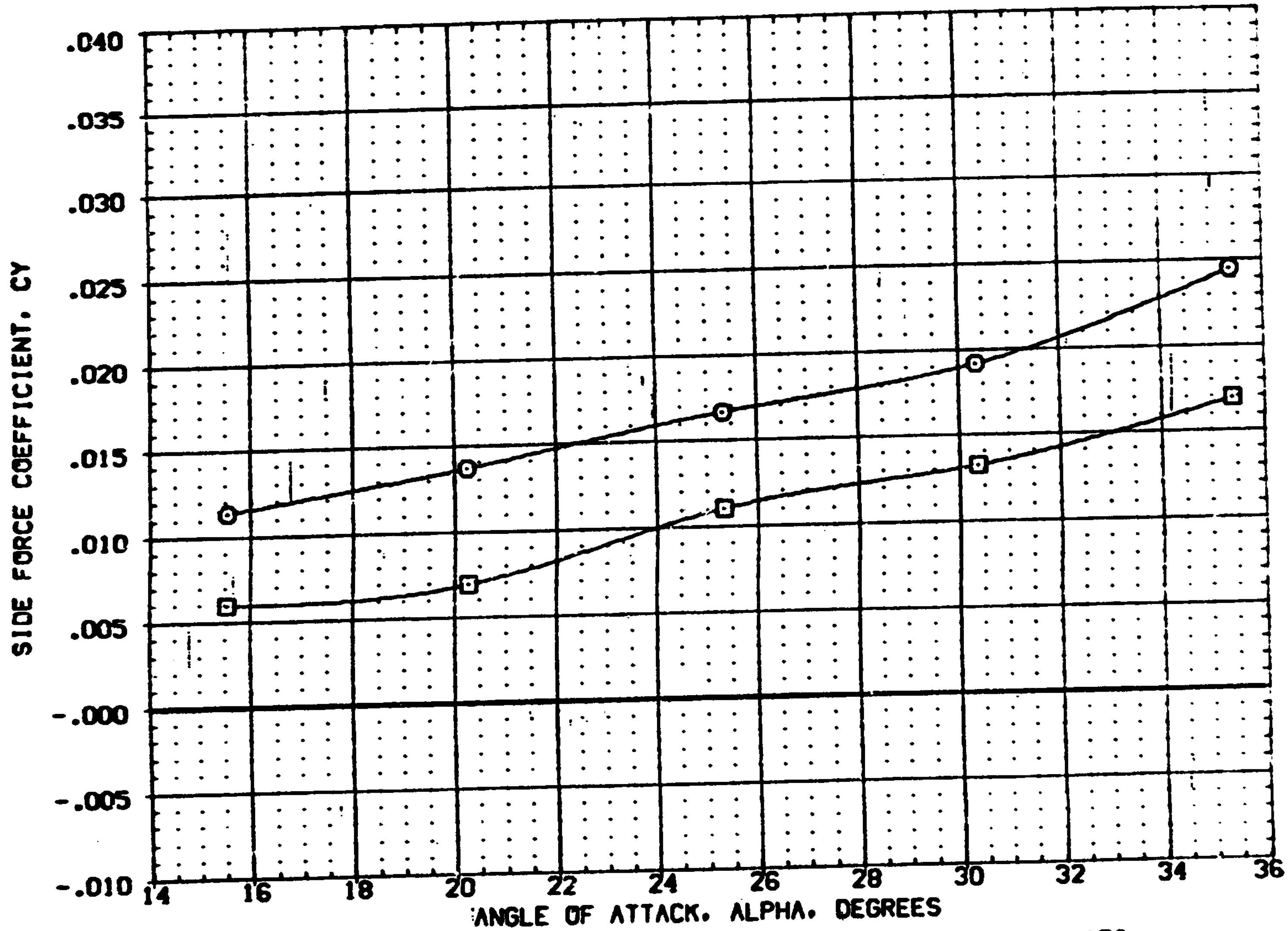


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N03)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-40.000	.000	40.000	275.000
(XB5F03)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-40.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

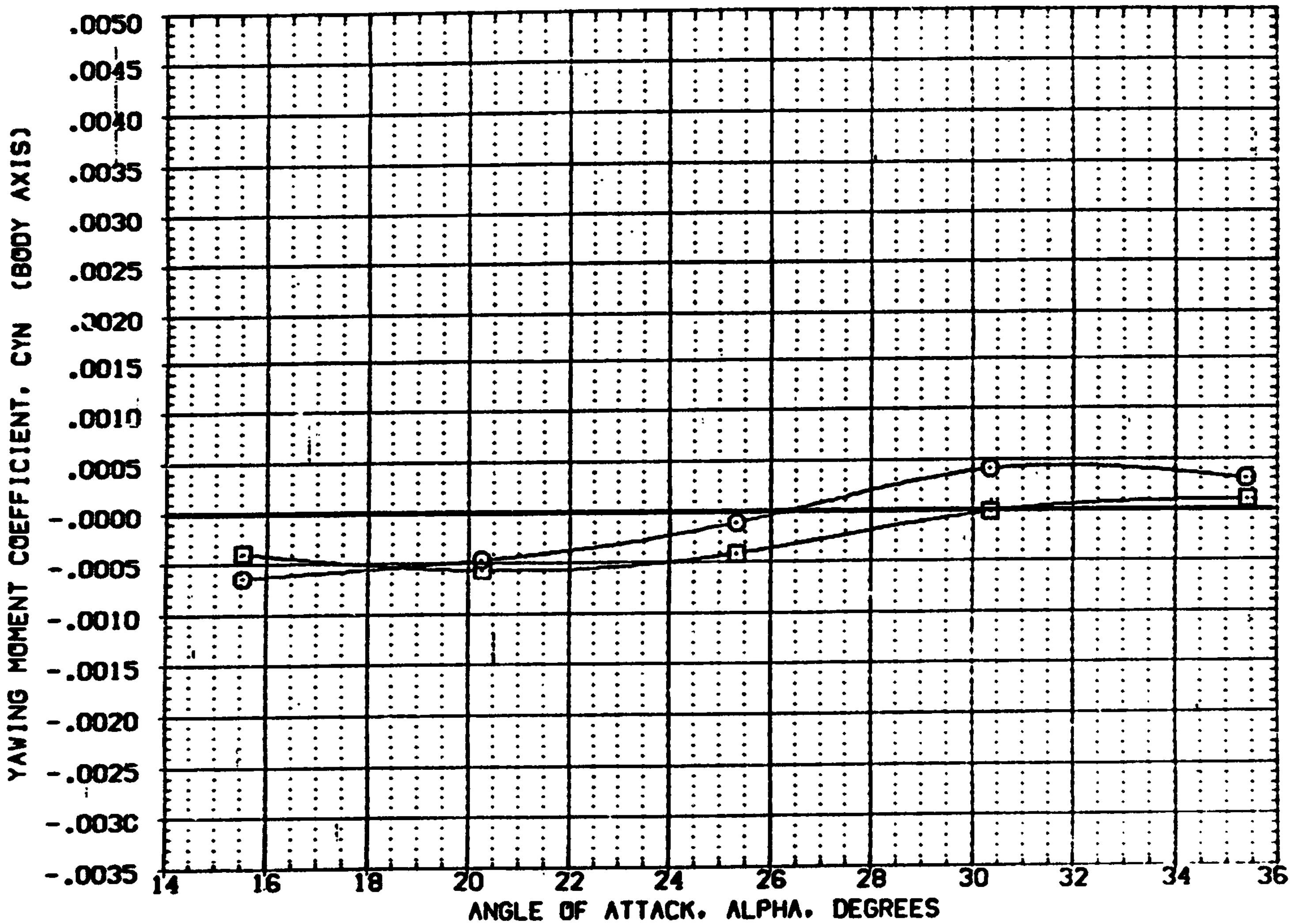


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N03)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	-40.000	.000	40.000	275.000
(XB5F03)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	-40.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

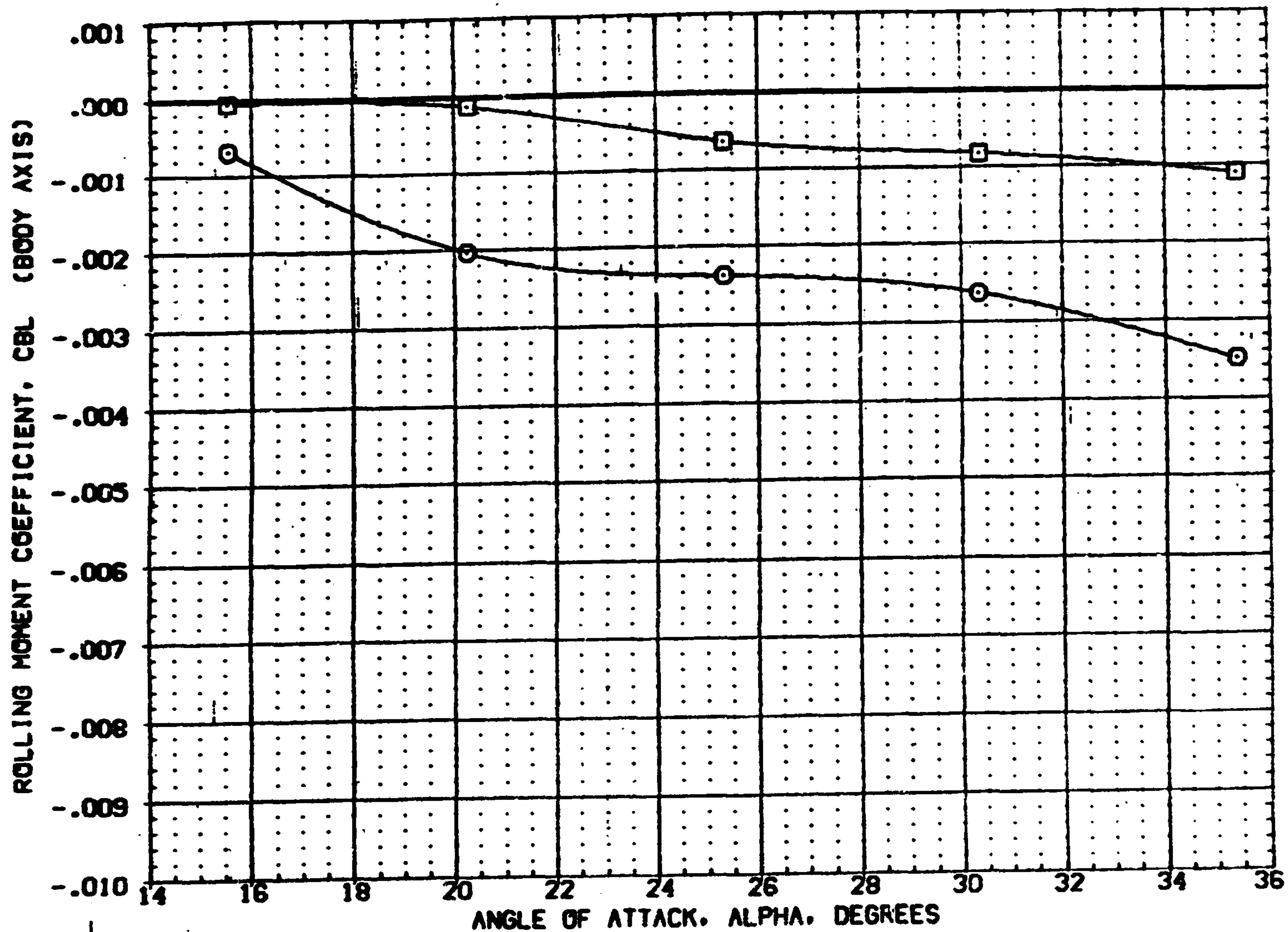


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

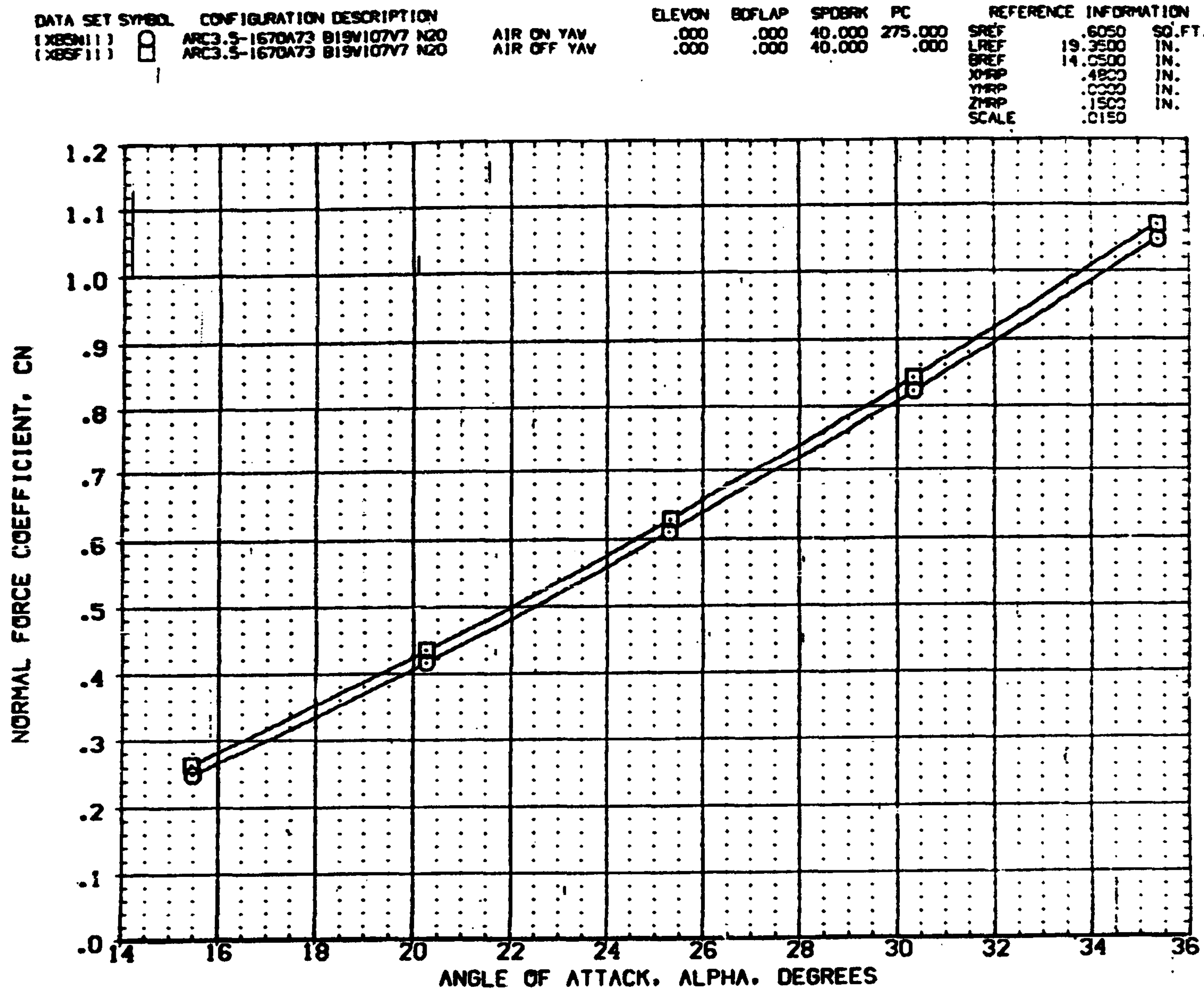


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N11)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F11)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

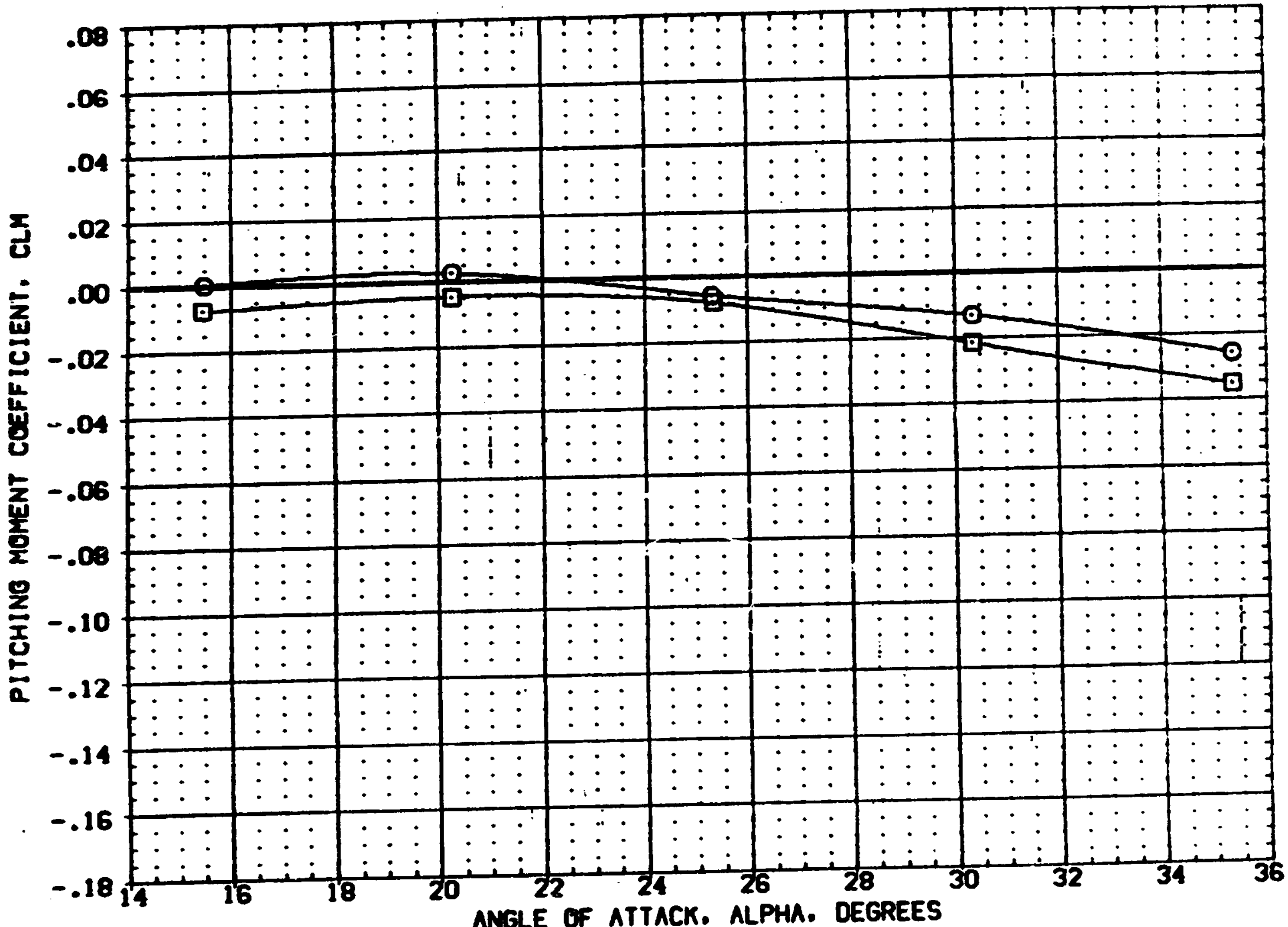


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N11)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F11)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

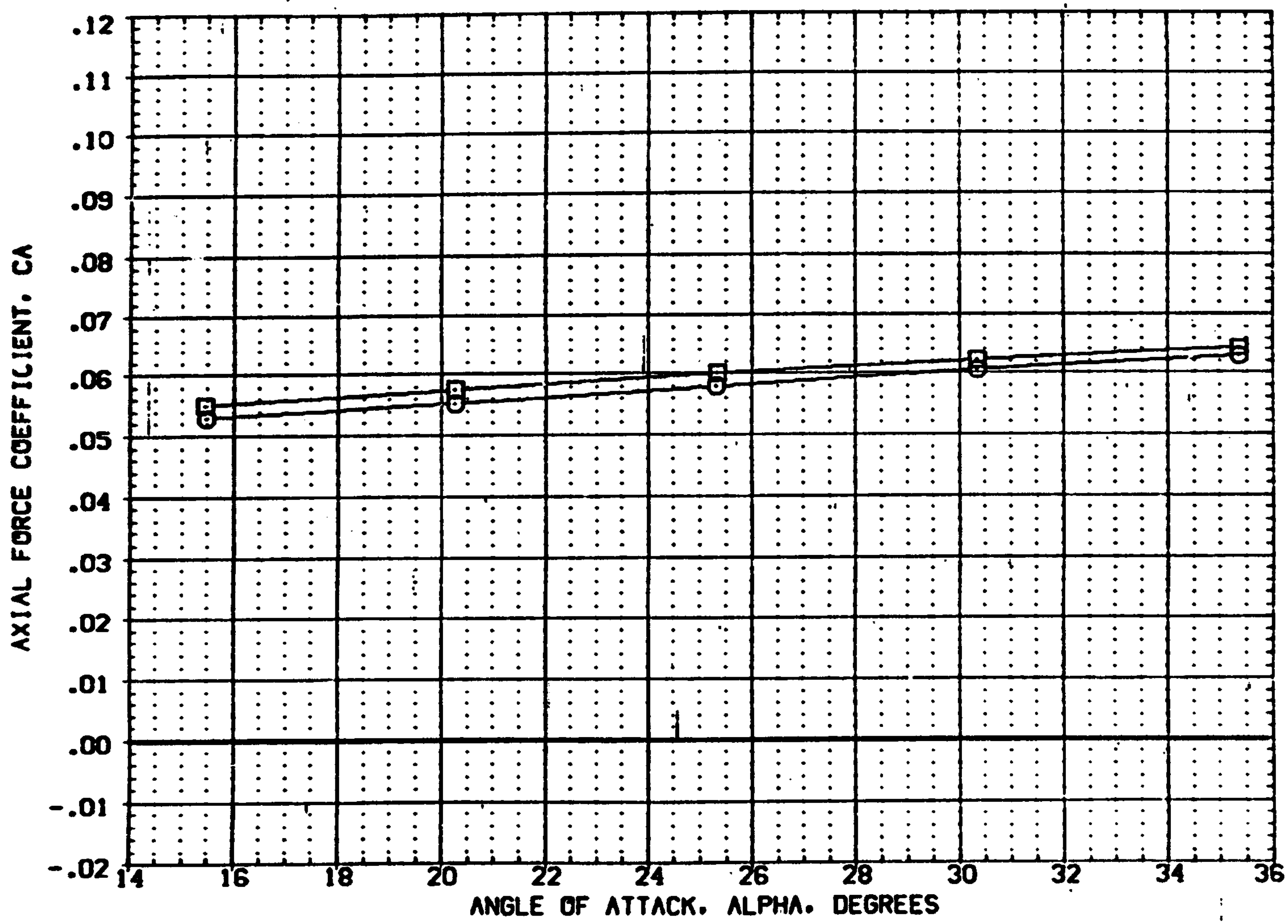


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N11)	○	ARC3.5-1670A73 B15V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F11)	□	ARC3.5-1670A73 B15V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

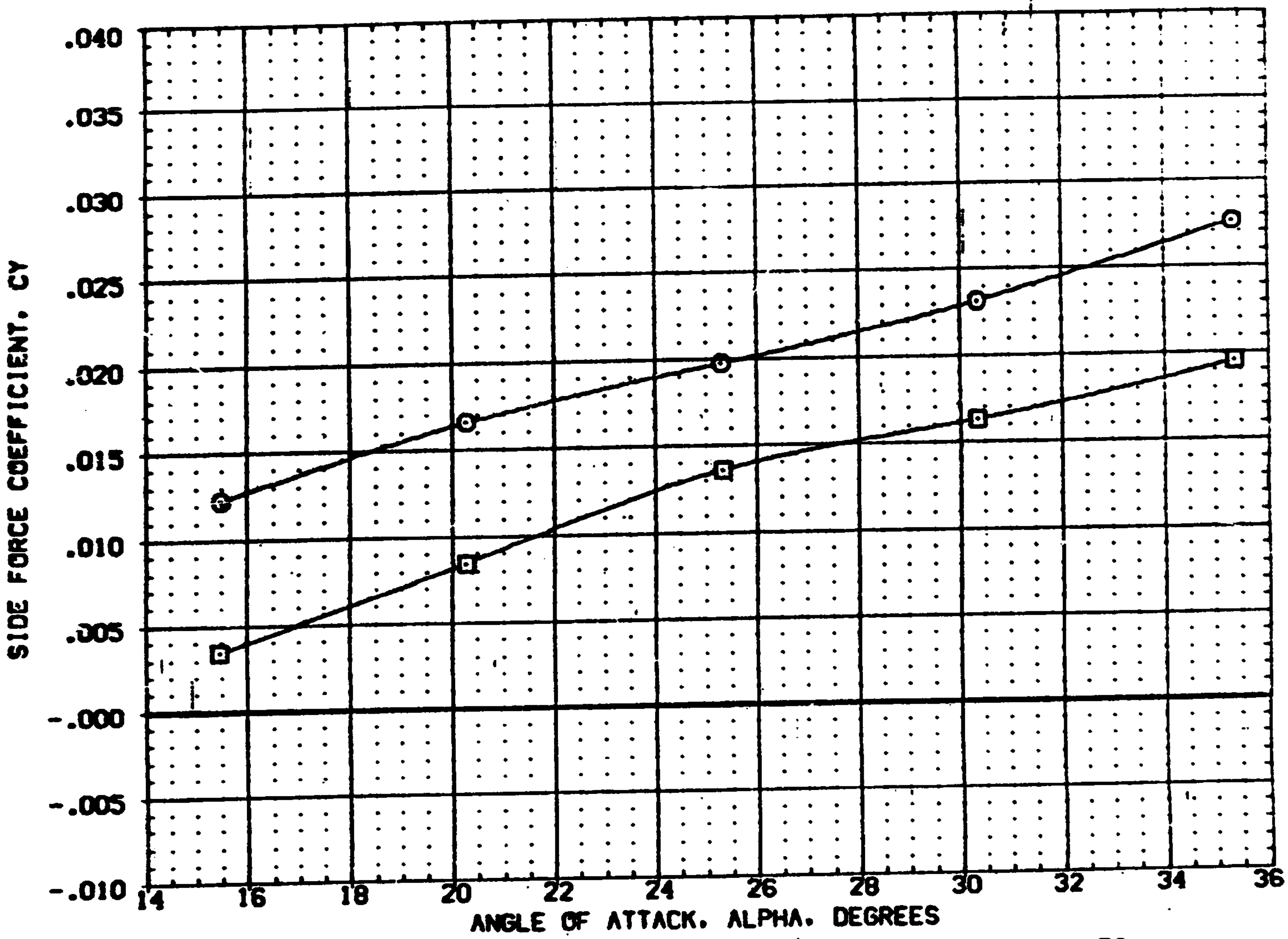


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N11)	⊙	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F11)	⊡	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

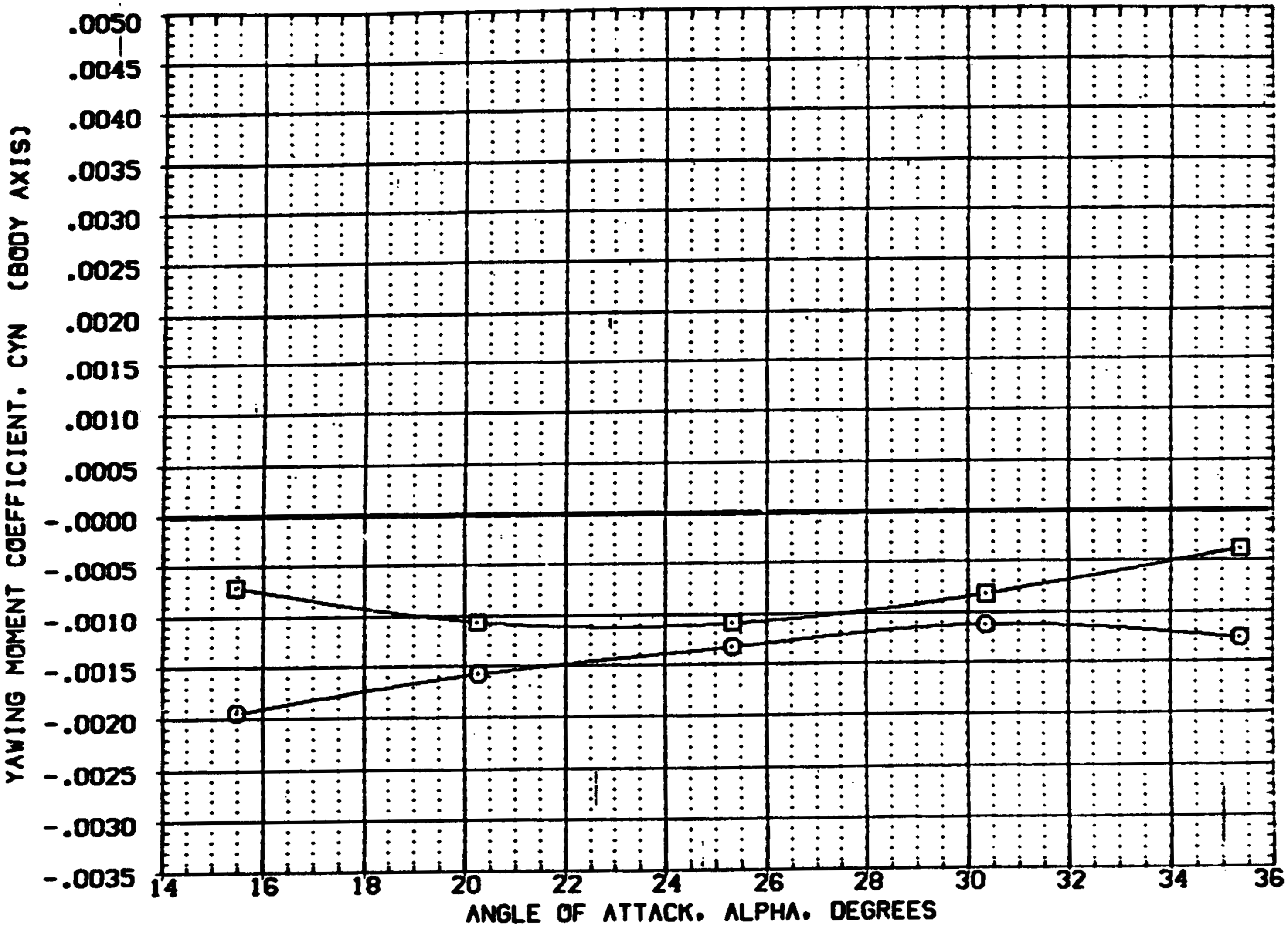


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

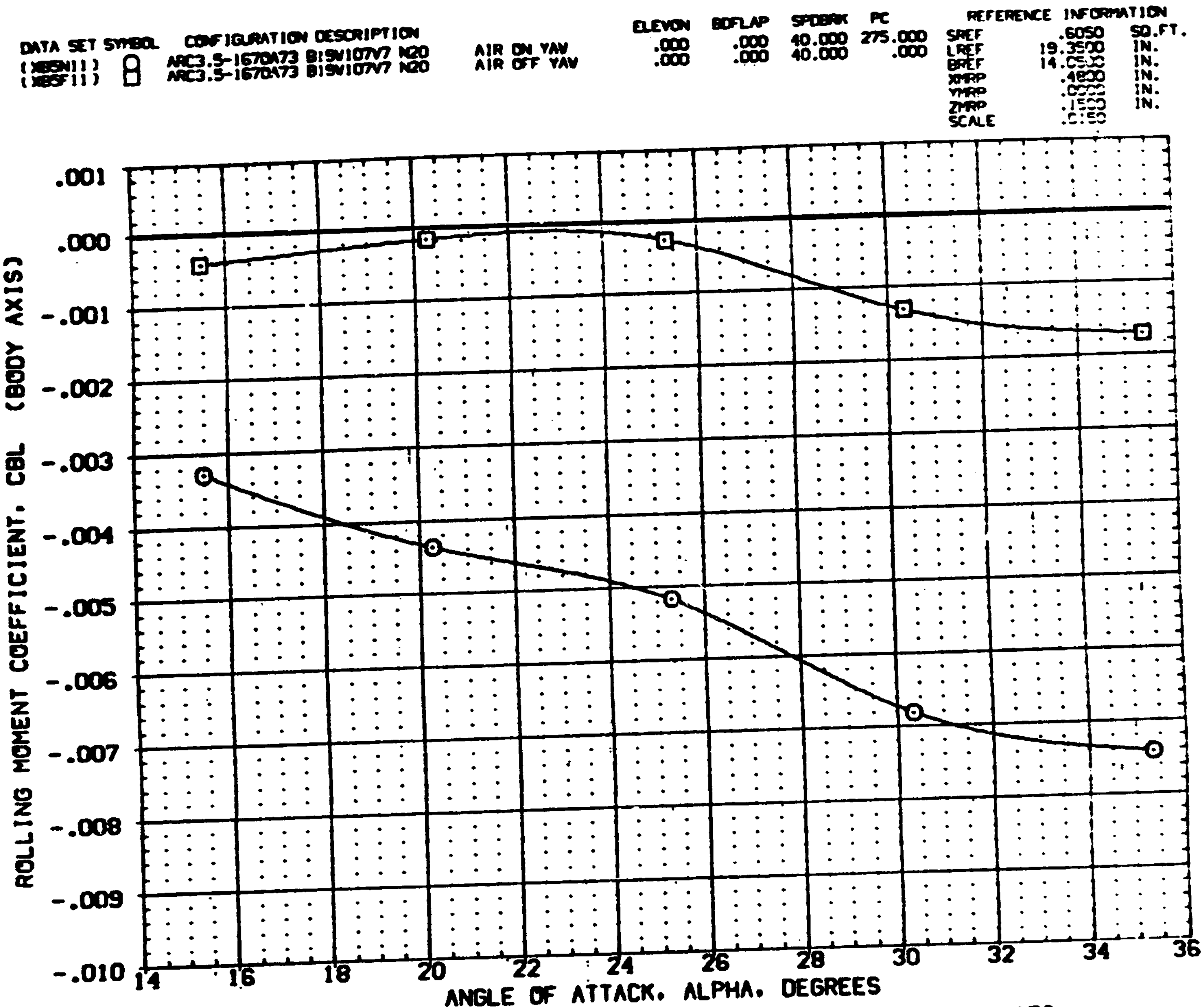


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N19)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F19)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

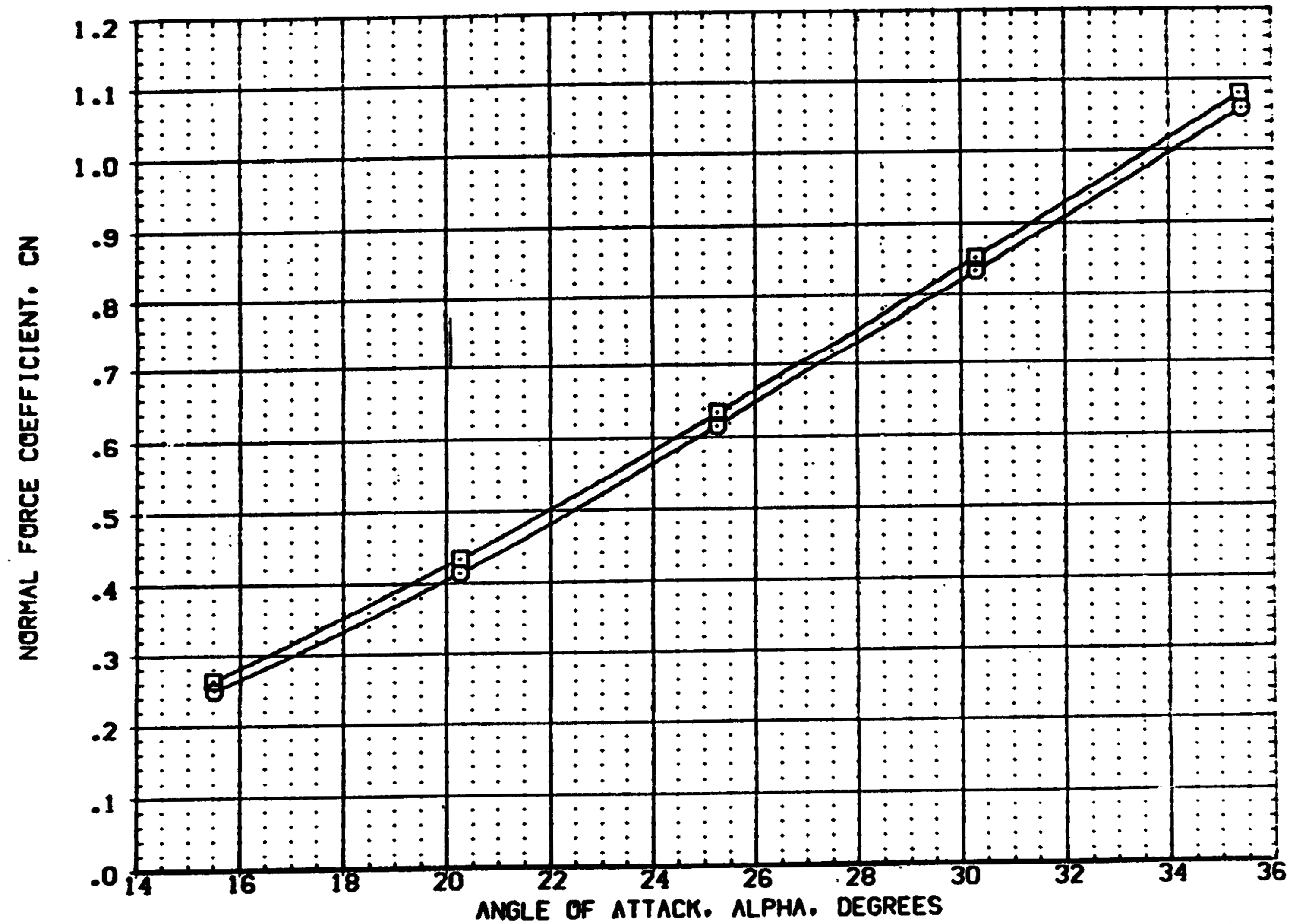


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

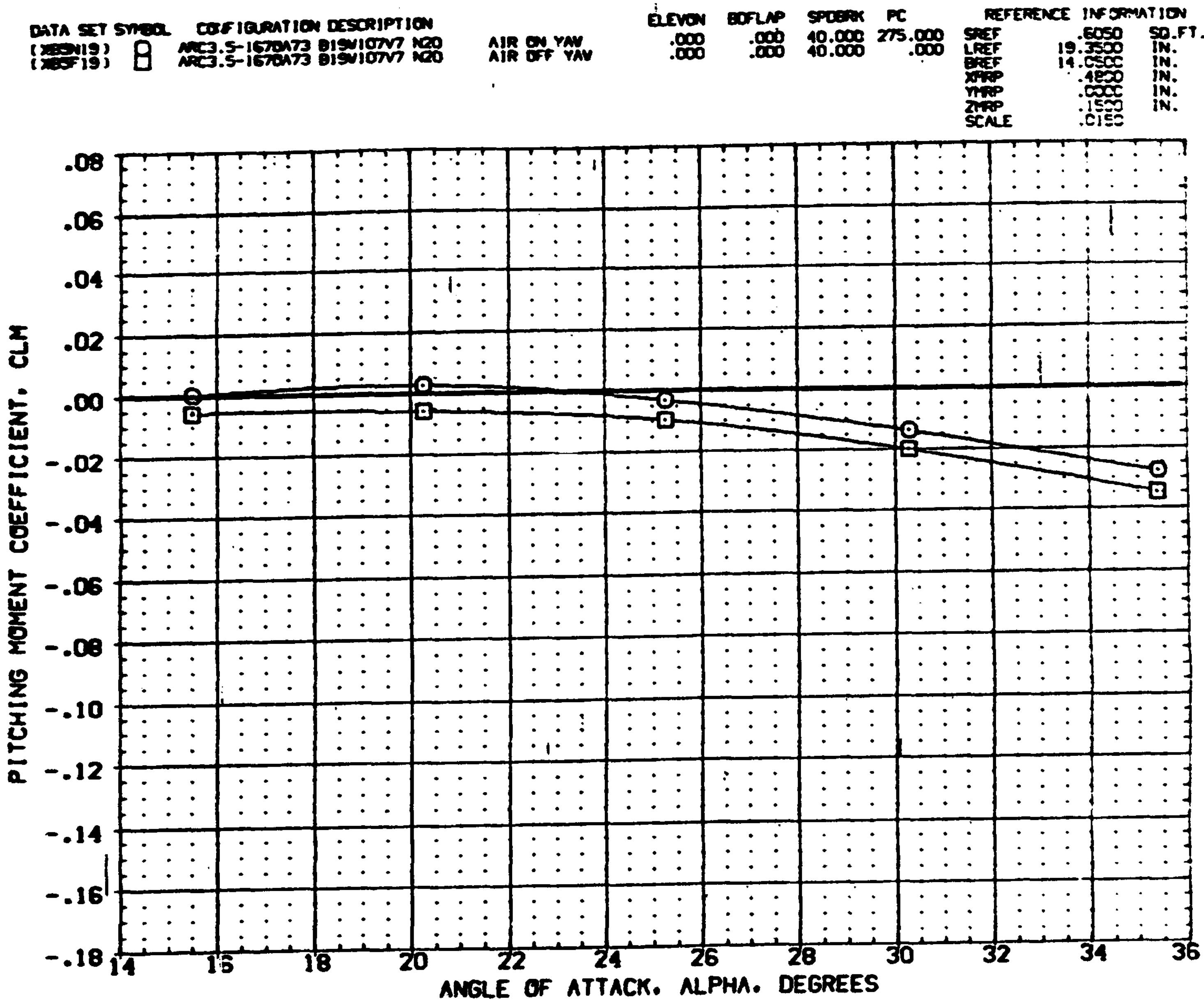


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

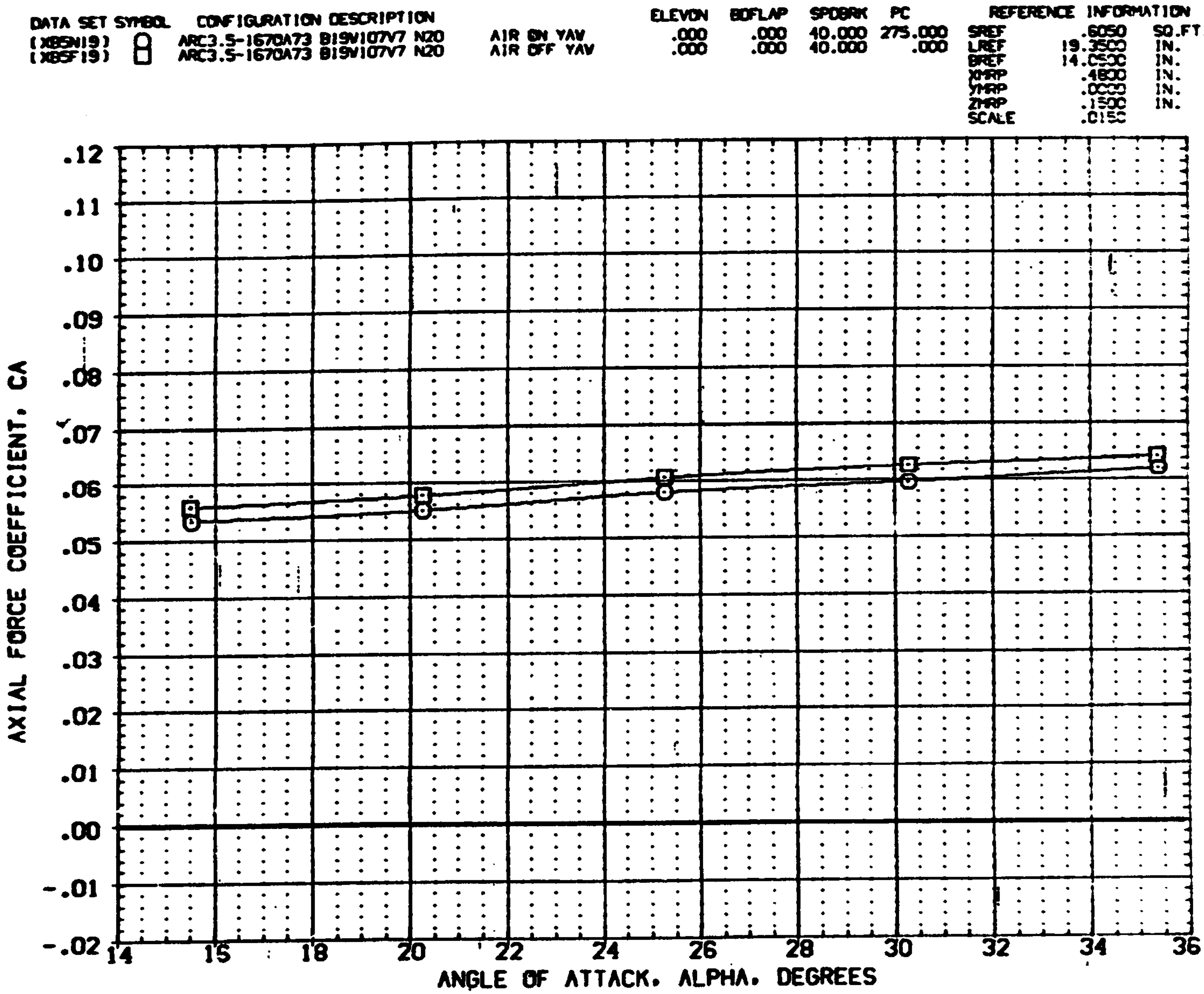


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N19)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F19)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

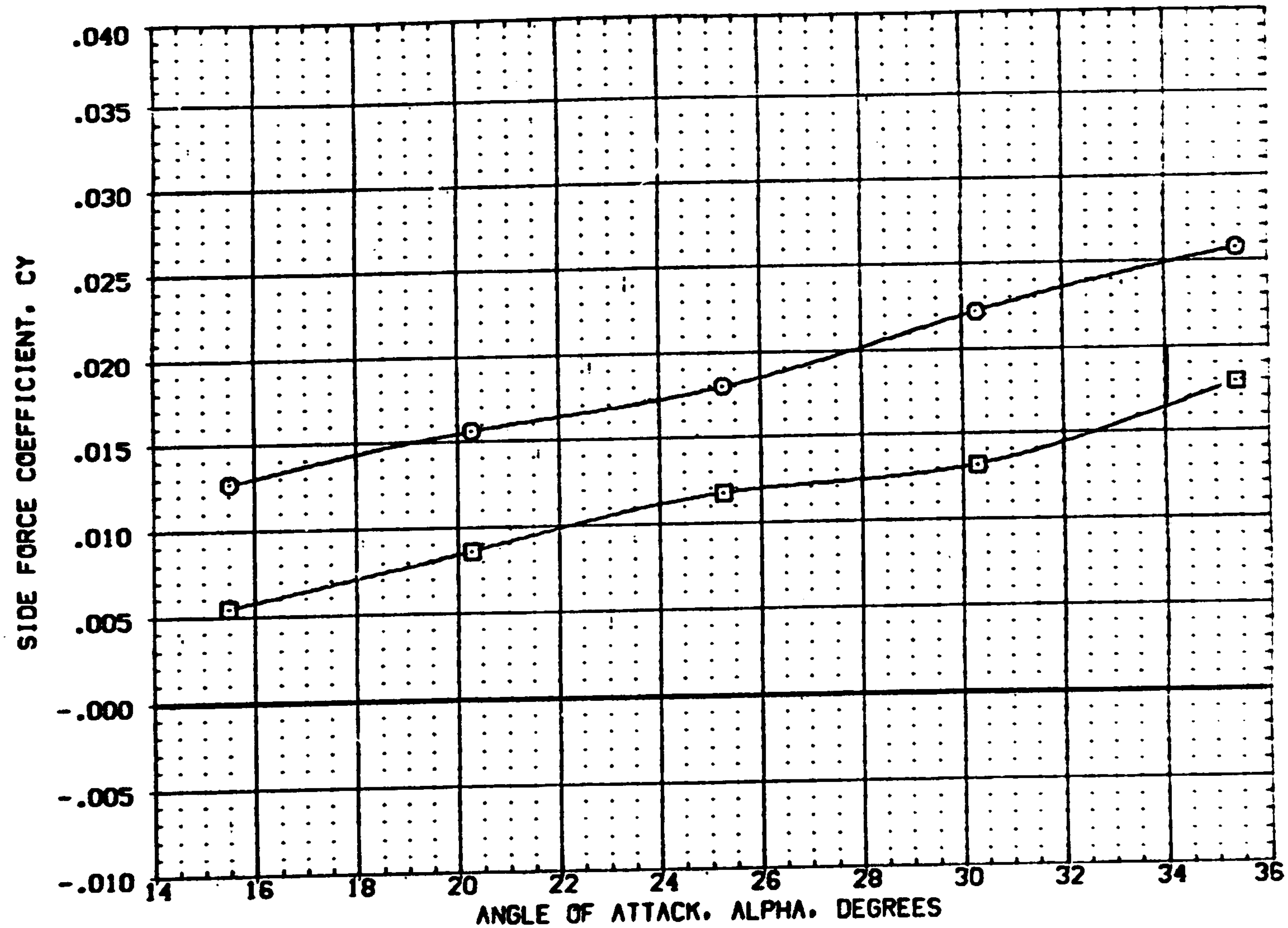


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N19)	⊡	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAW	.000	.000	40.000	275.000
(XB5F19)	⊙	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAW	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

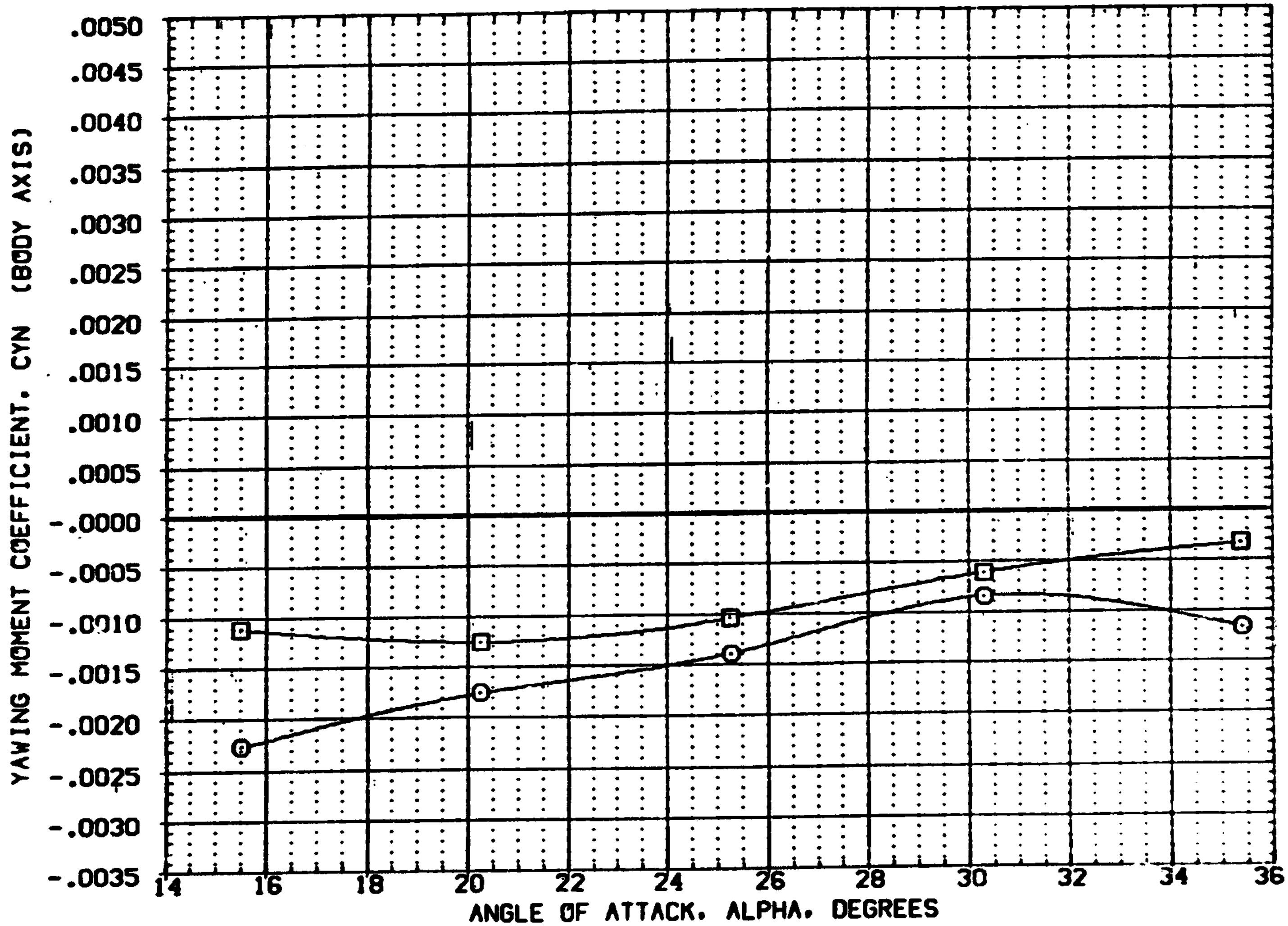


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

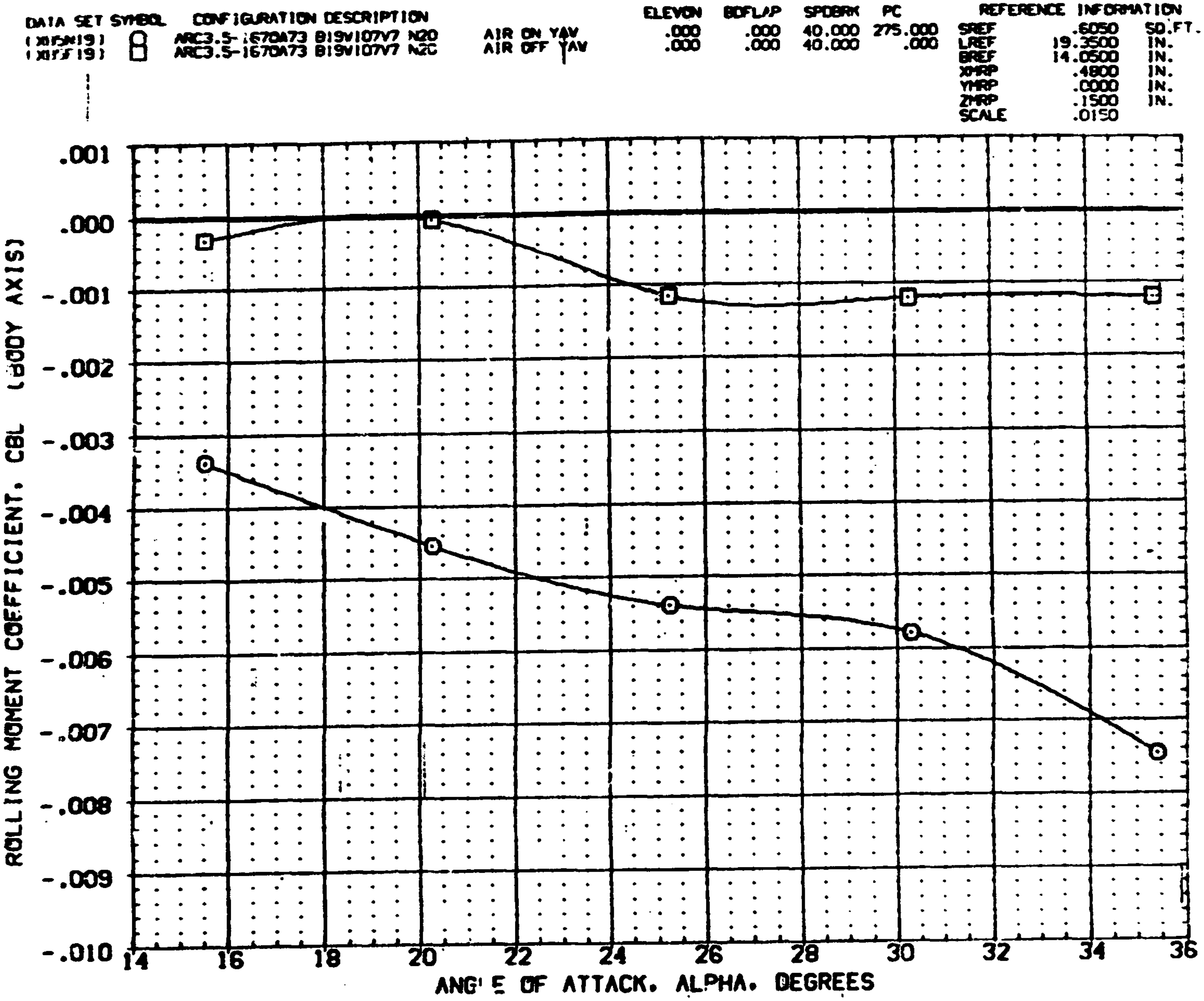


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

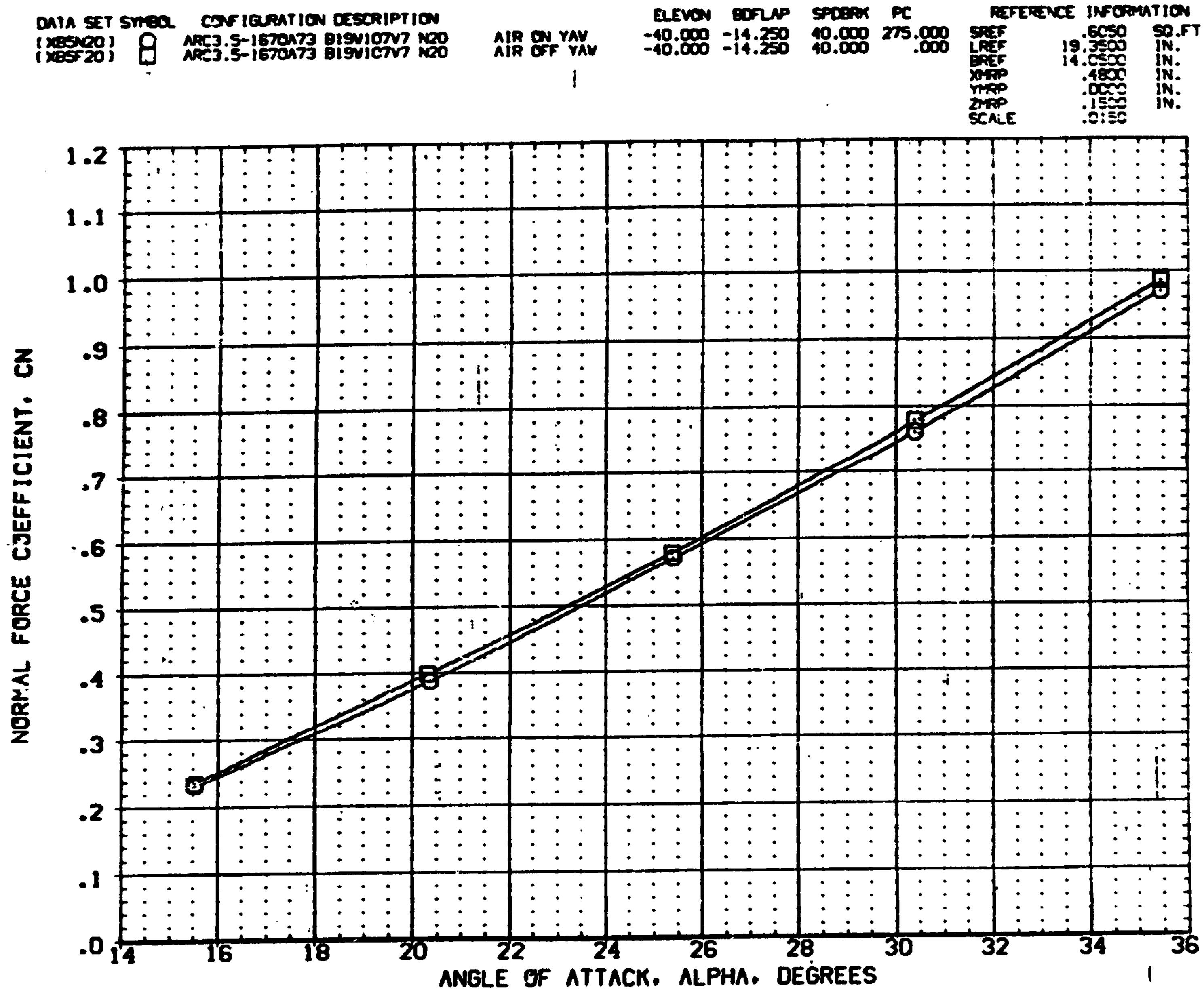


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

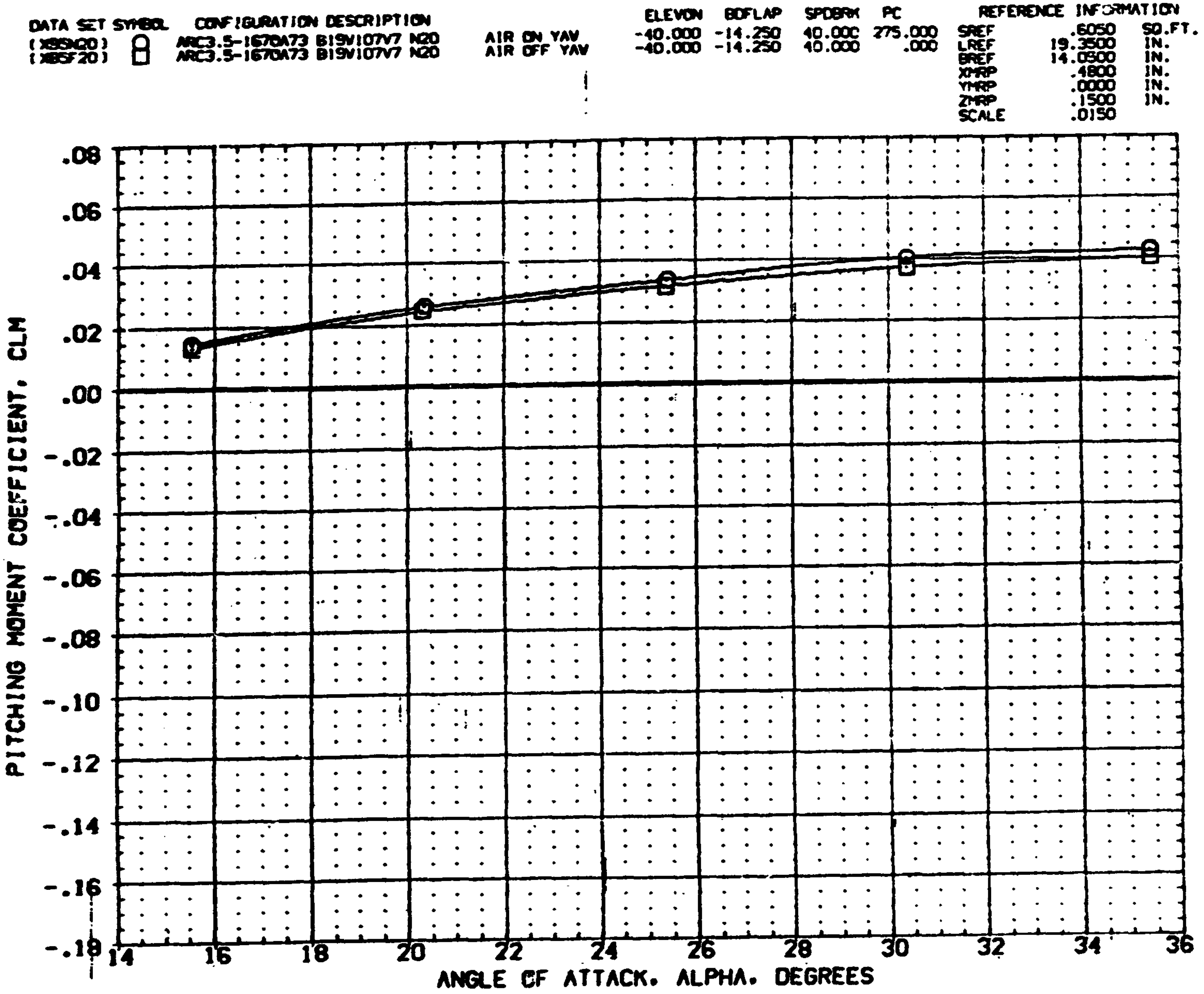


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N20)	○	ARC3.5-1670A73 B19V107V7 N20	AIR ON YAV	-40.000	-14.250	40.000	275.000
(XB5F20)	□	ARC3.5-1670A73 B19V107V7 N20	AIR OFF YAV	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

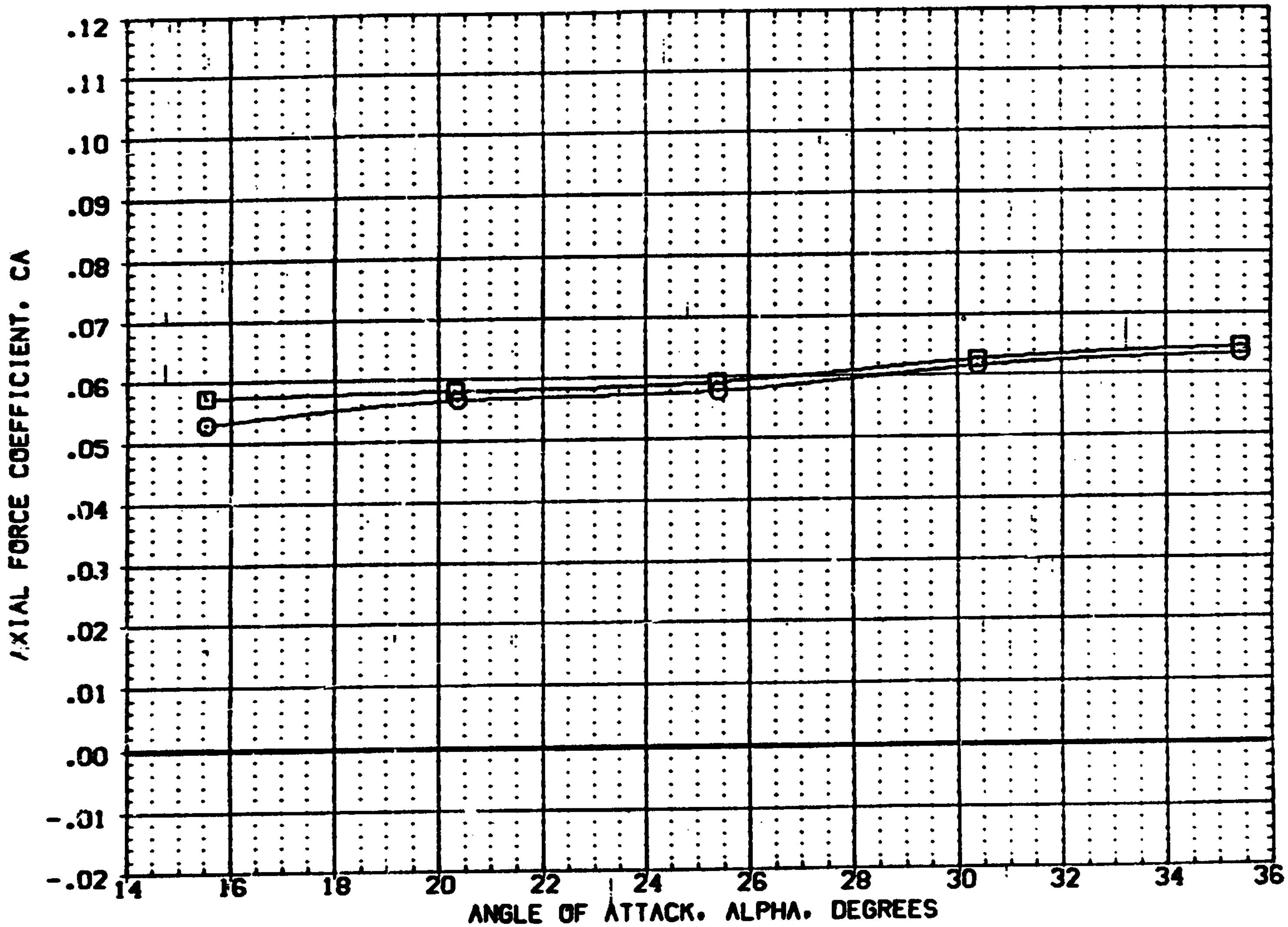


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.
(A)MACH = 10.29

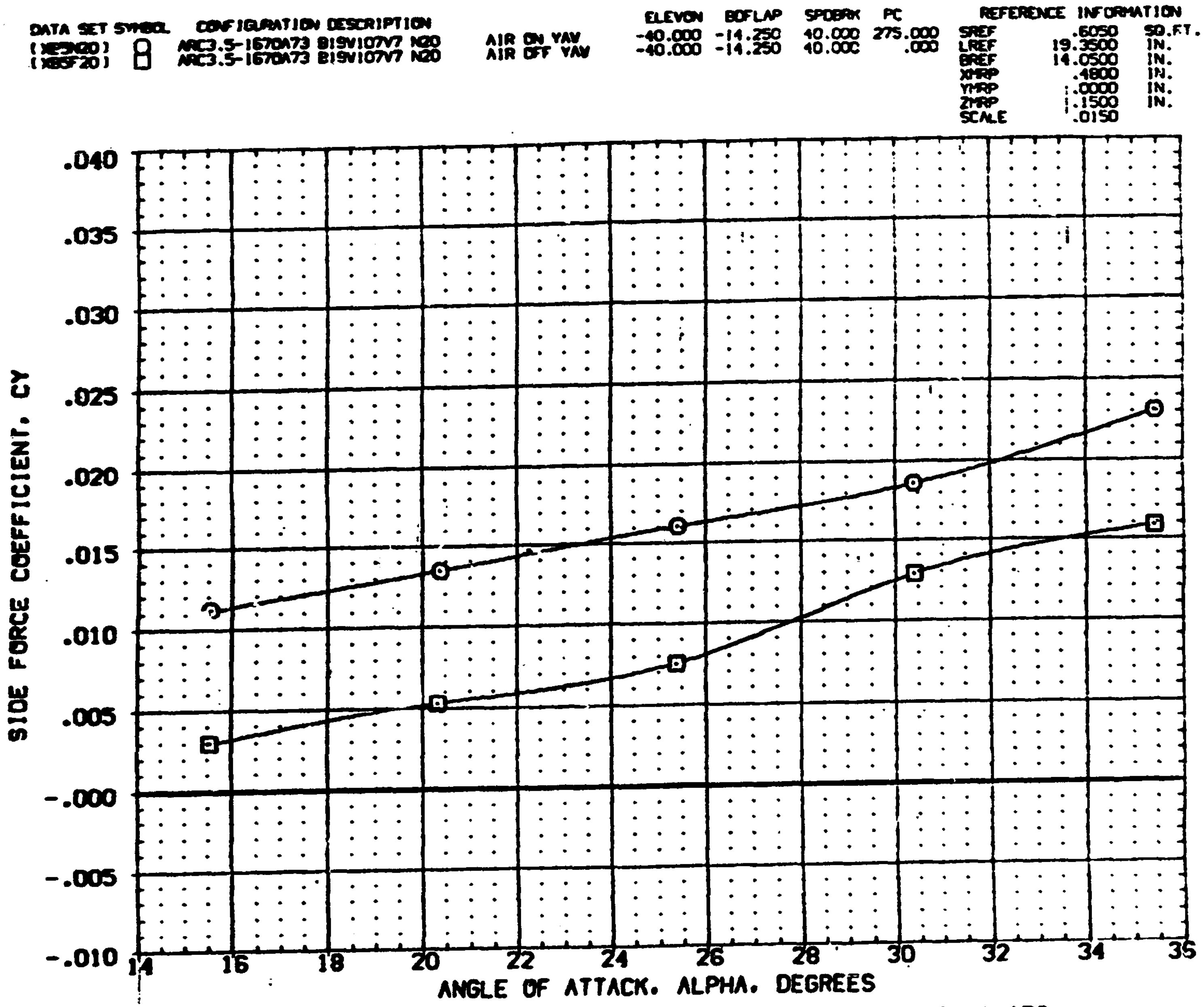


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

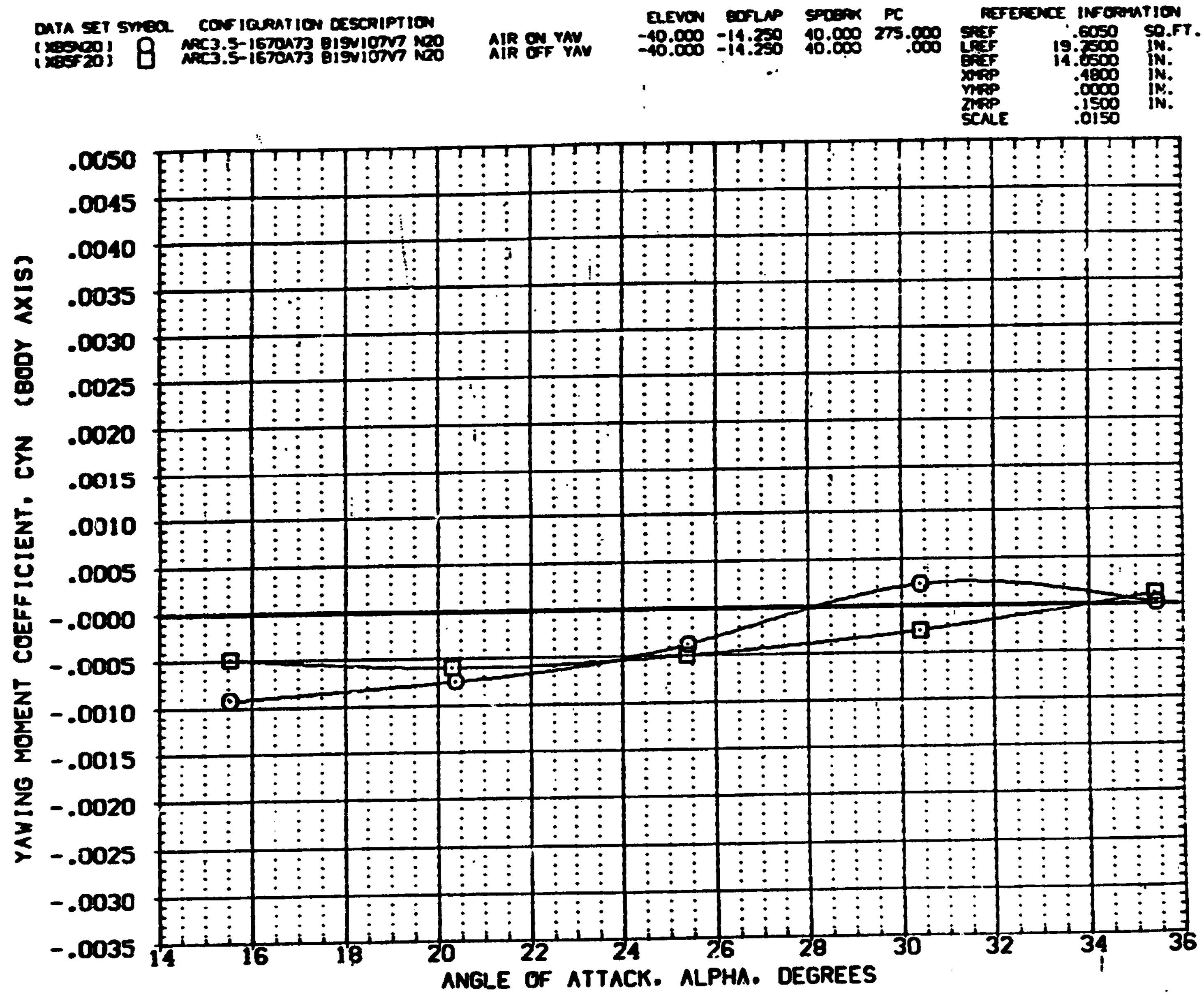


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

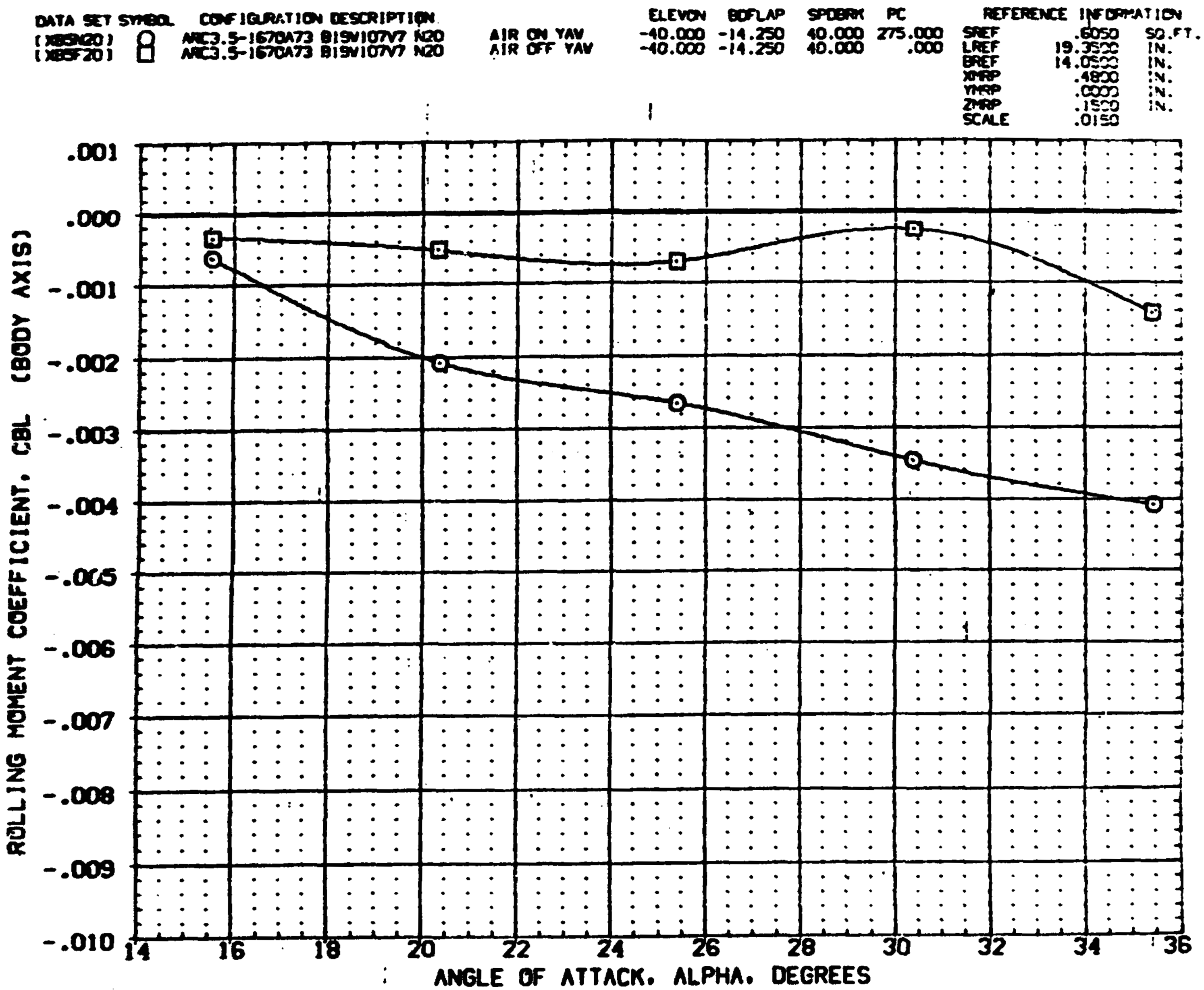


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N29)	○	ARC3.5-1670A73 B19W107V7 N20	AIR ON YAW	-40.000	-14.250	40.000	375.000
(XB5F29)	□	ARC3.5-1670A73 B19W107V7 N20	AIR OFF YAW	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

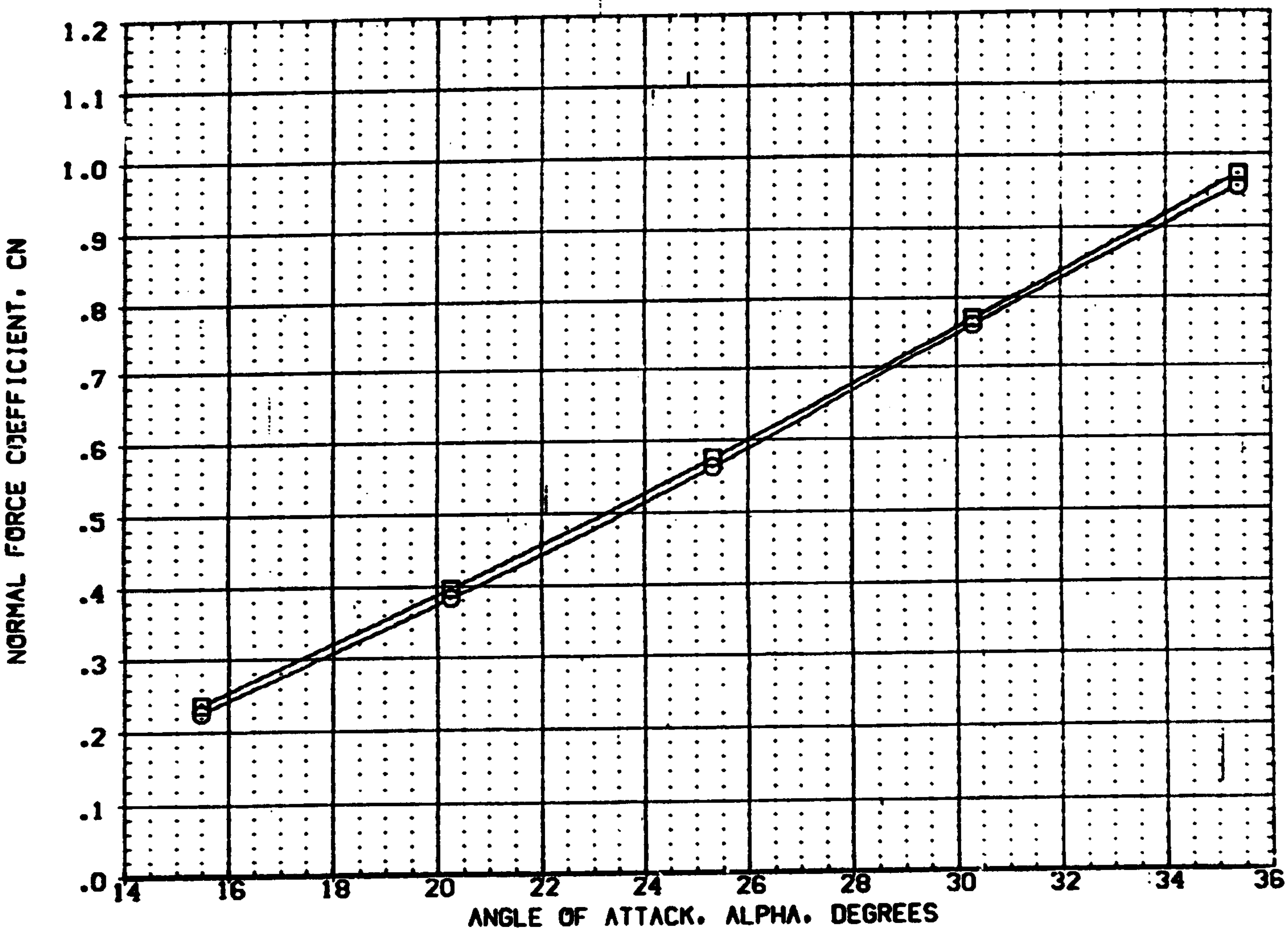


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

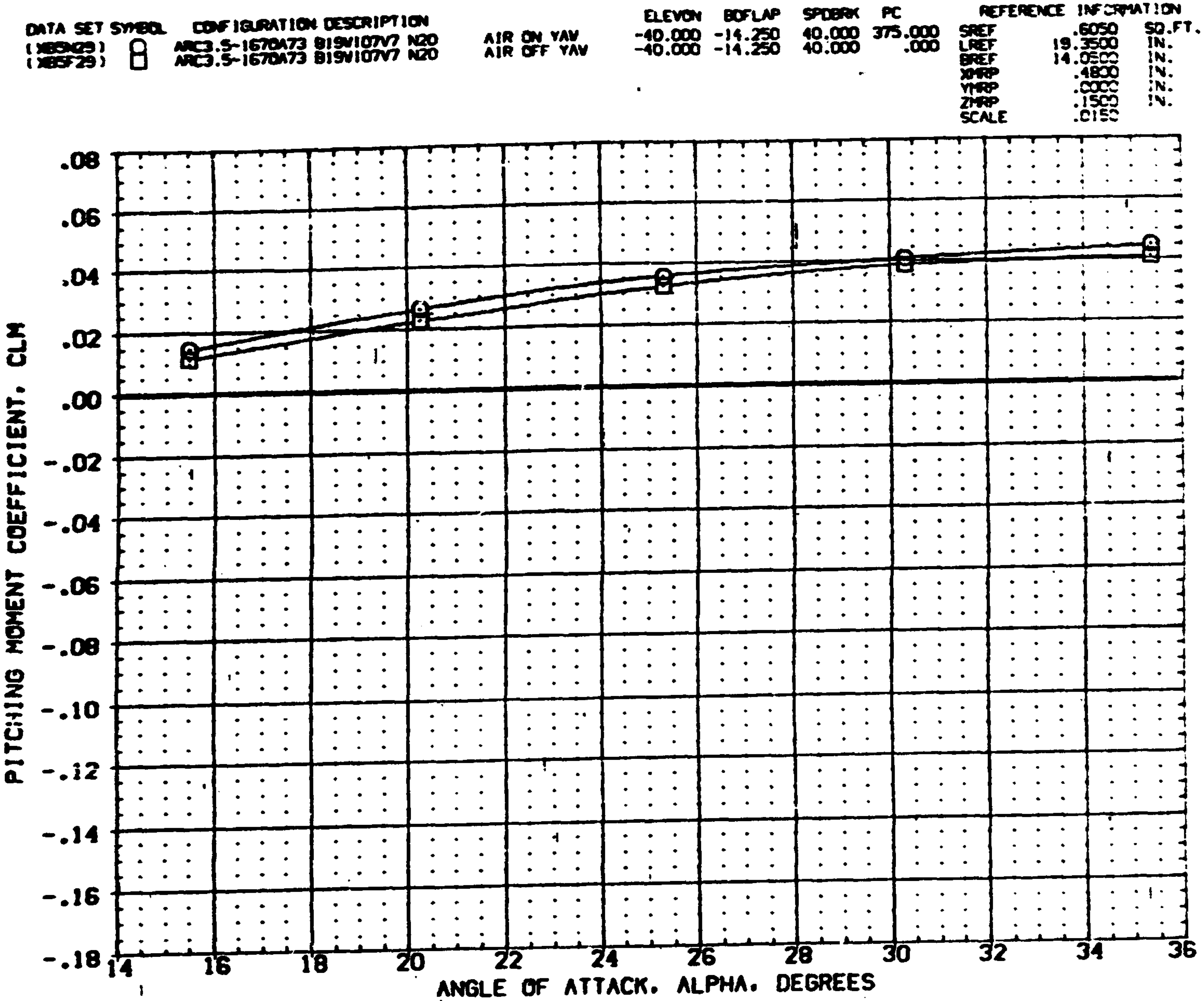


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

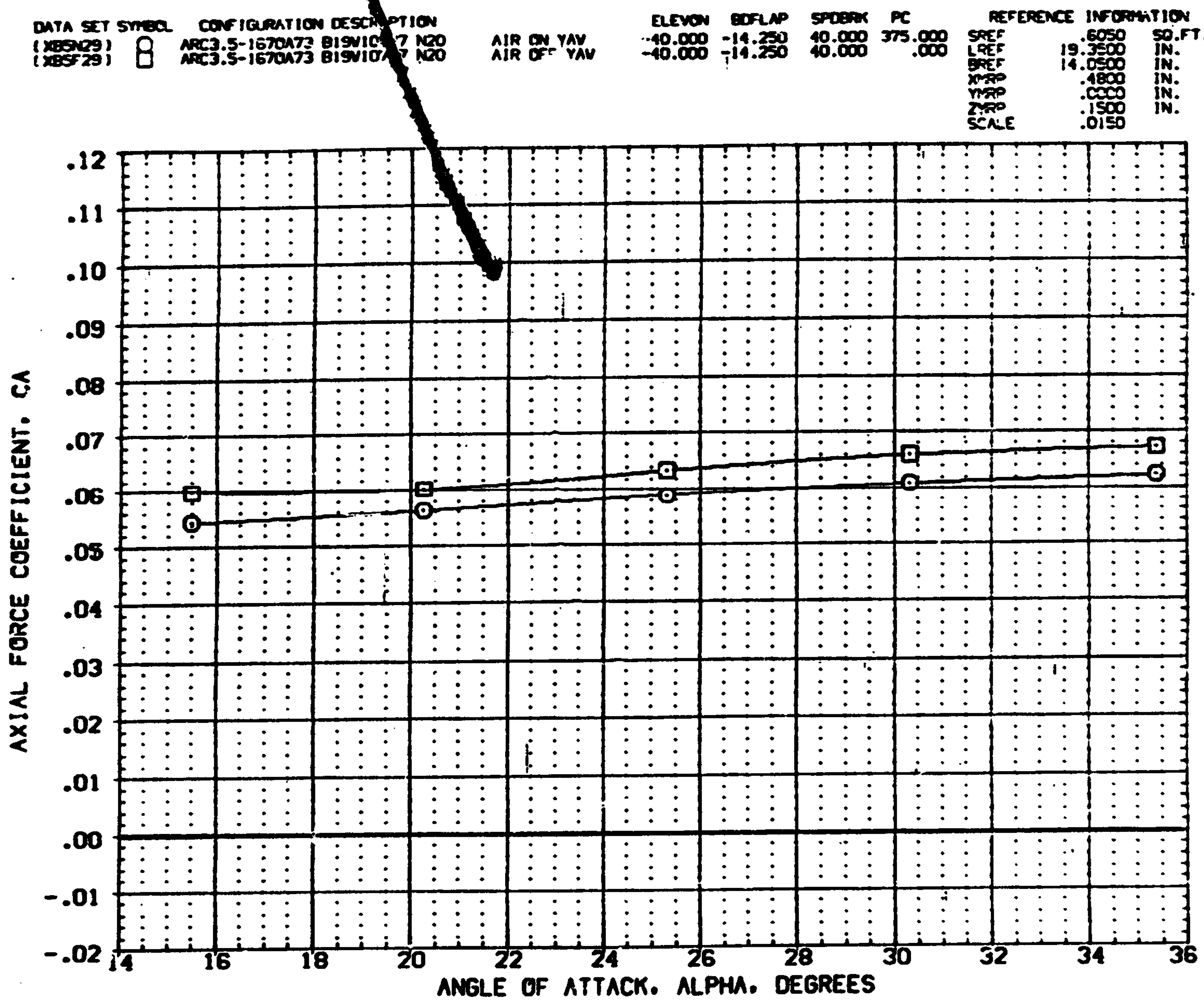


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

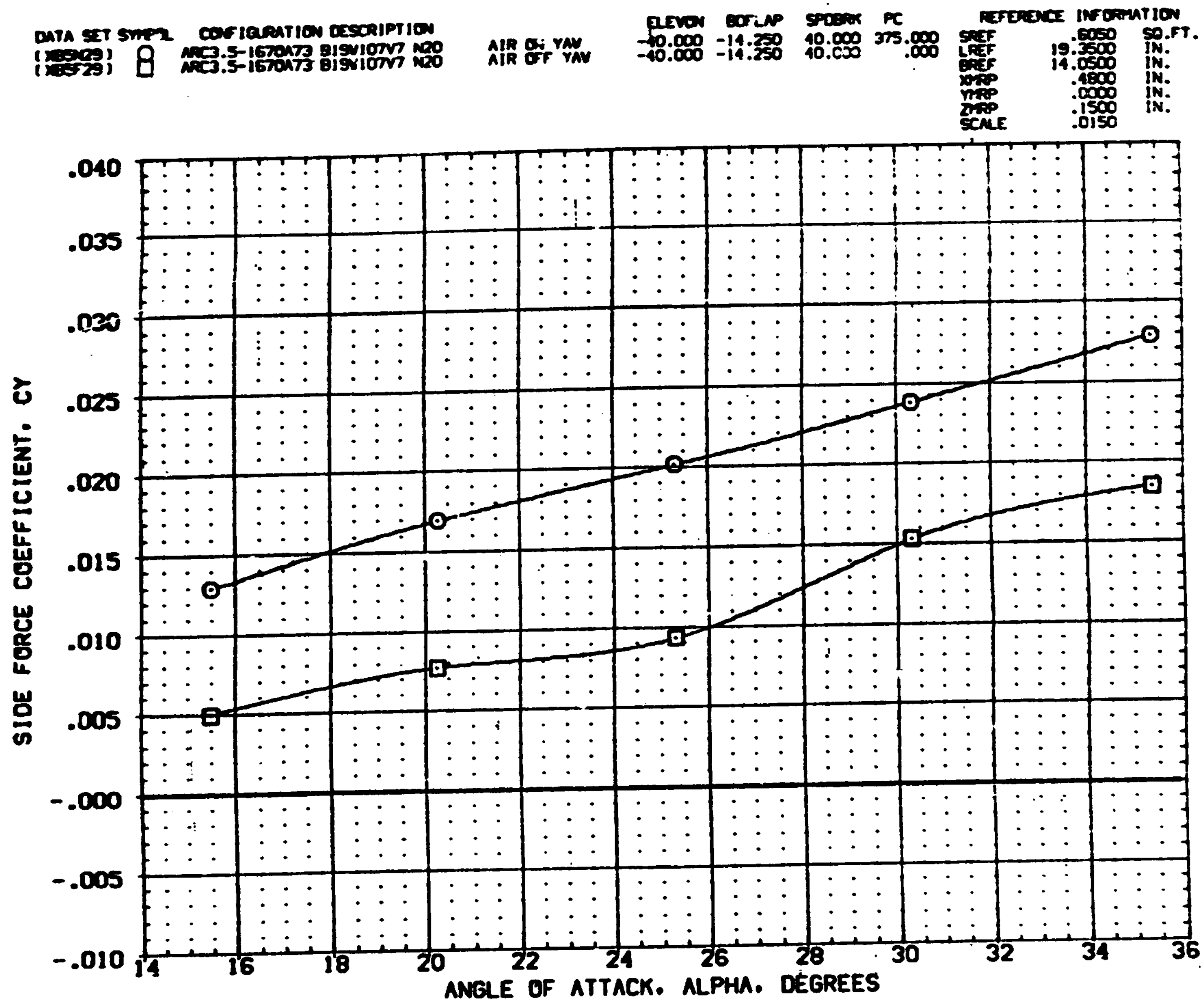


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

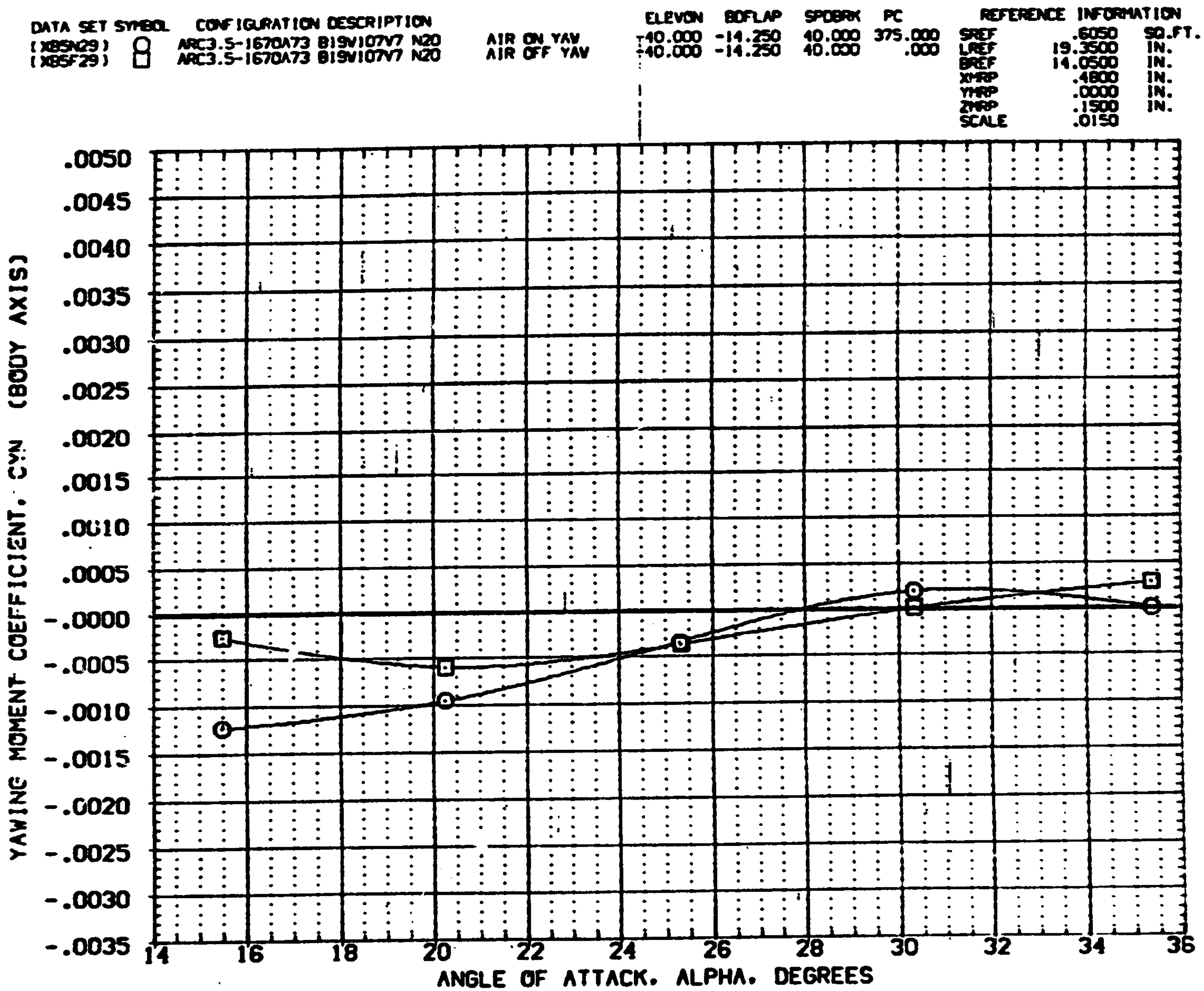


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

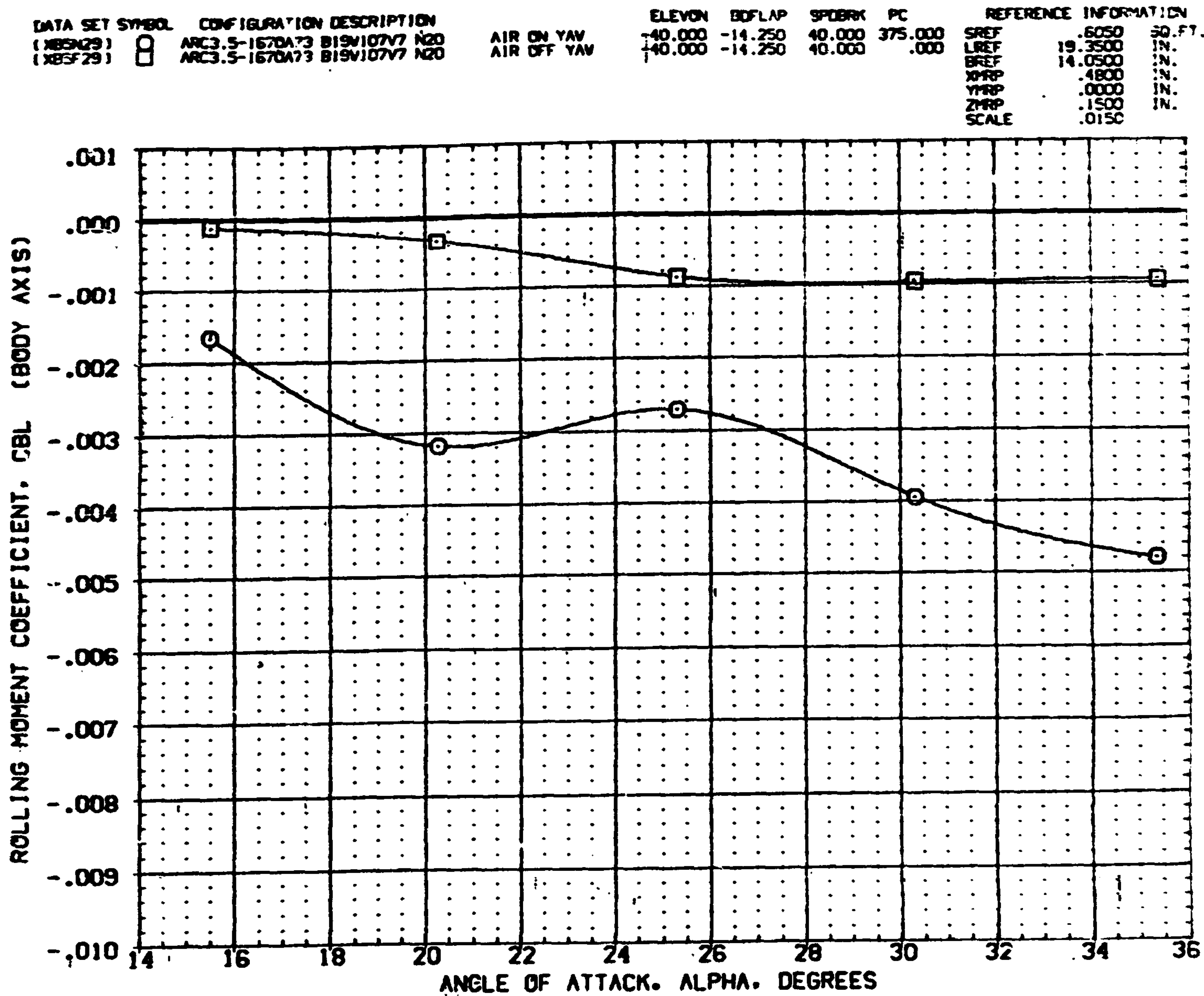


FIG. 4 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (YAW), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XBSN07)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	294.000
(XBSF07)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE	INFORMATION	
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

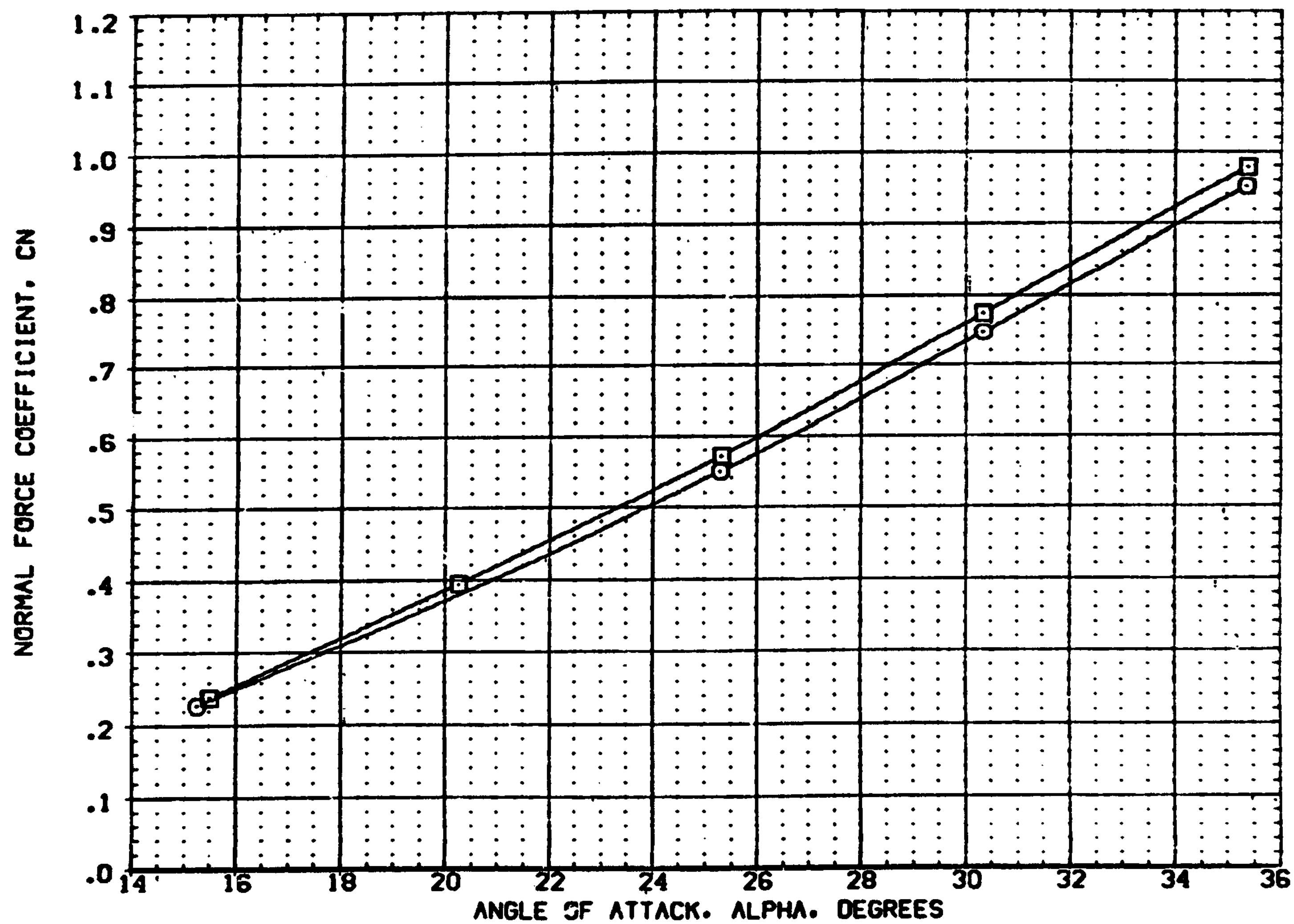


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XBSN07)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	294.000
(XBSF07)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE	INFORMATION	
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.18[illegible]	IN.
YMRP	.00[illegible]	IN.
ZMRP	.15[illegible]	IN.
SCALE	.015[illegible]	

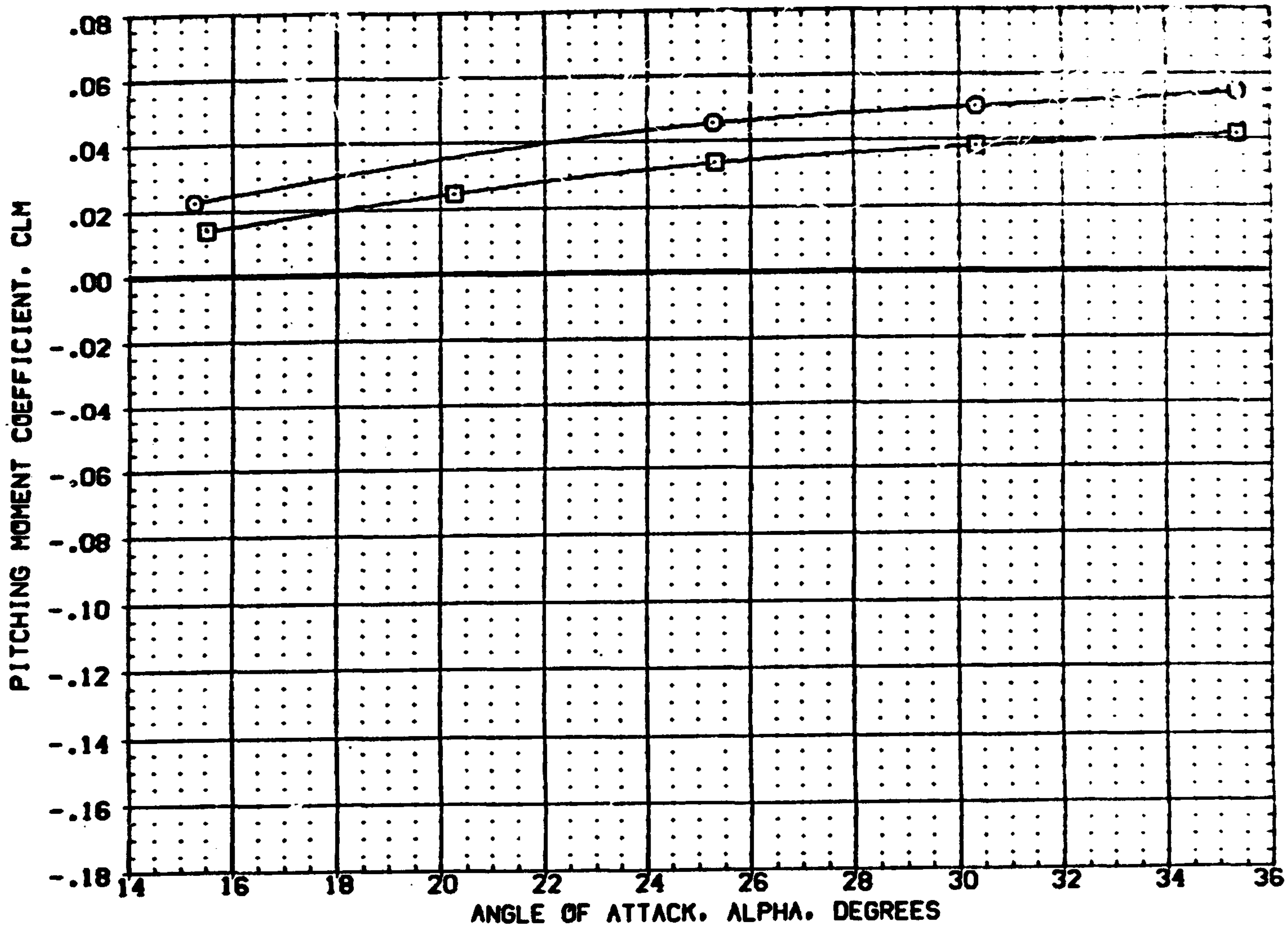


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

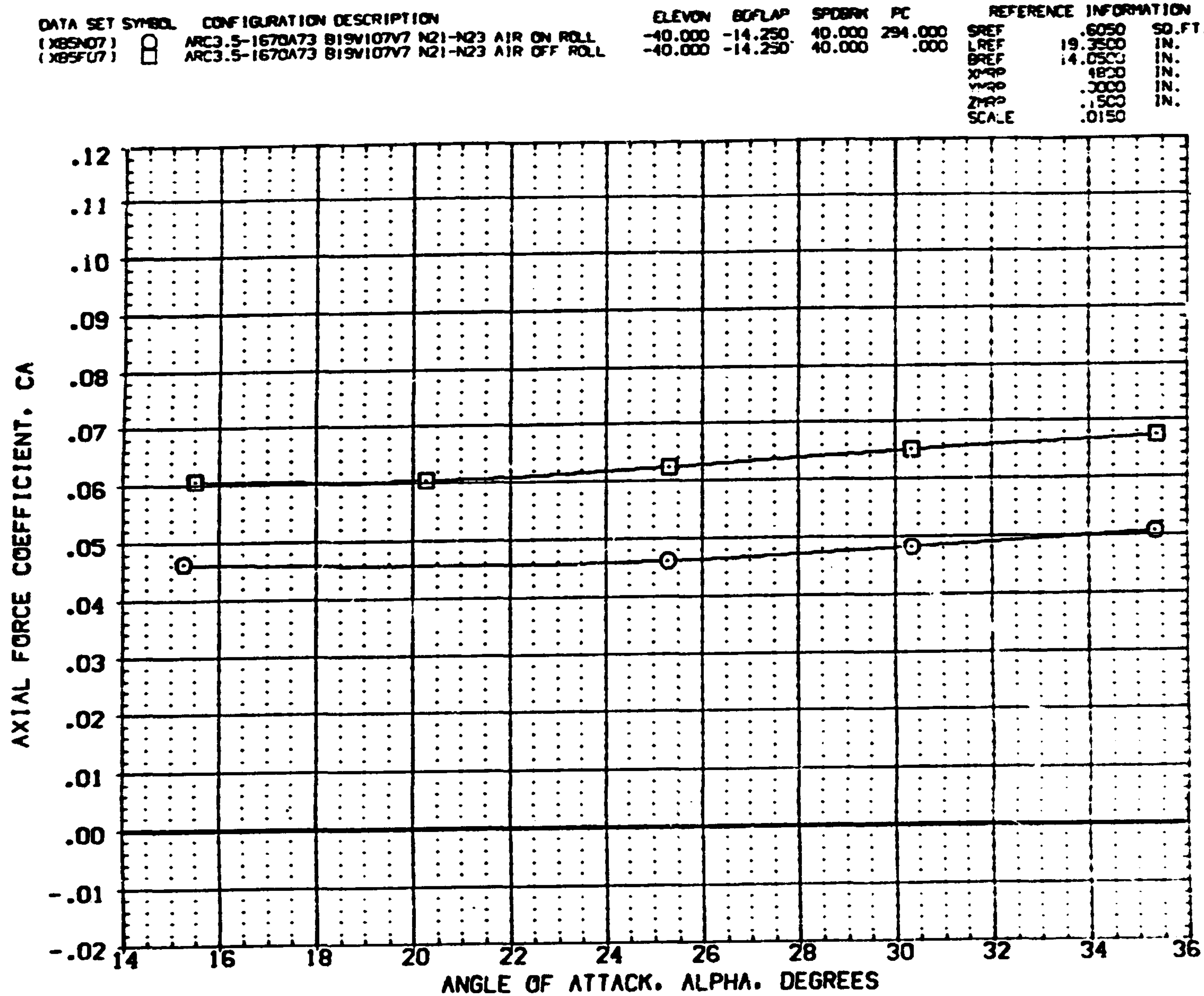


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

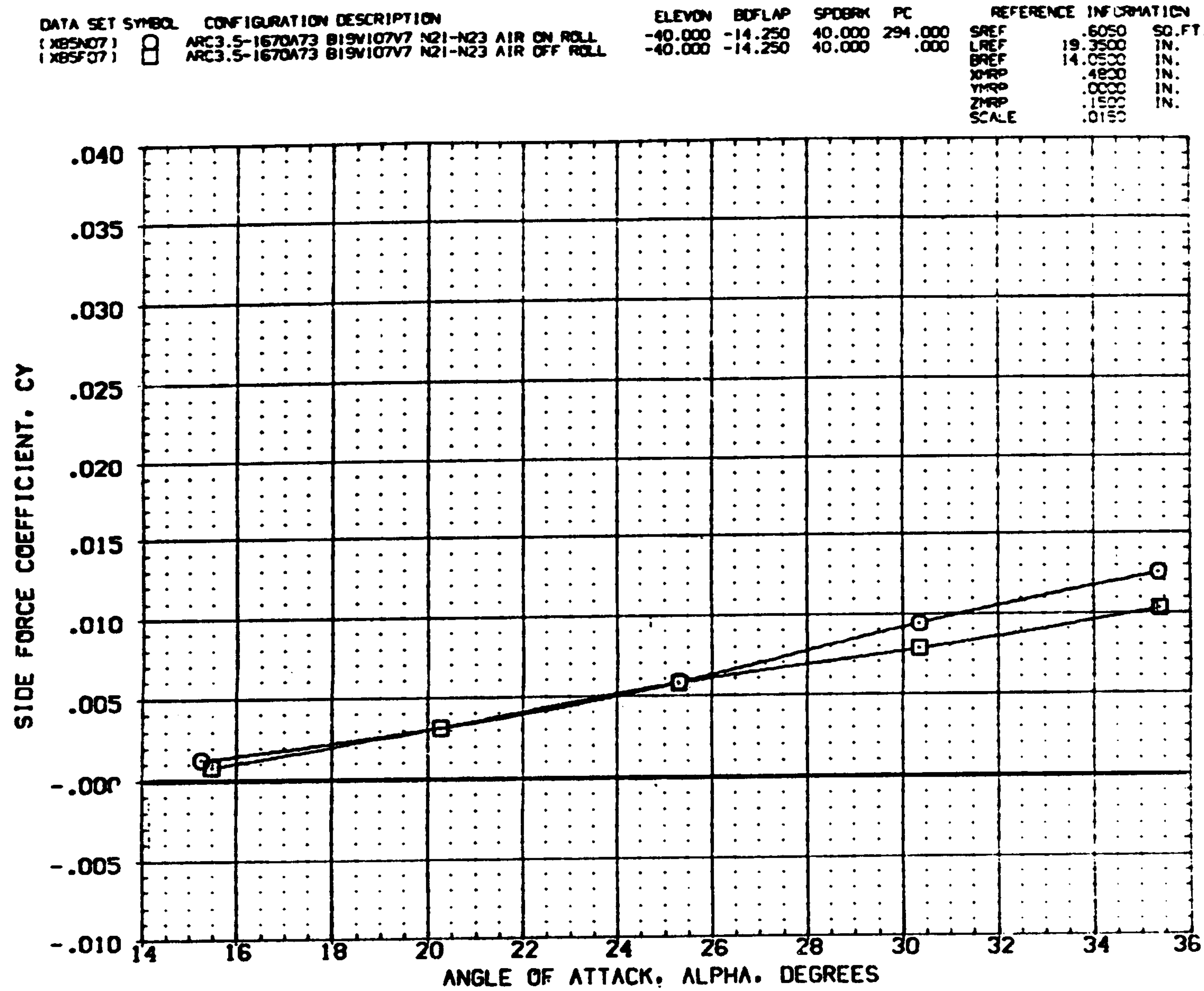


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N07)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	294.000
(XB5F07)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

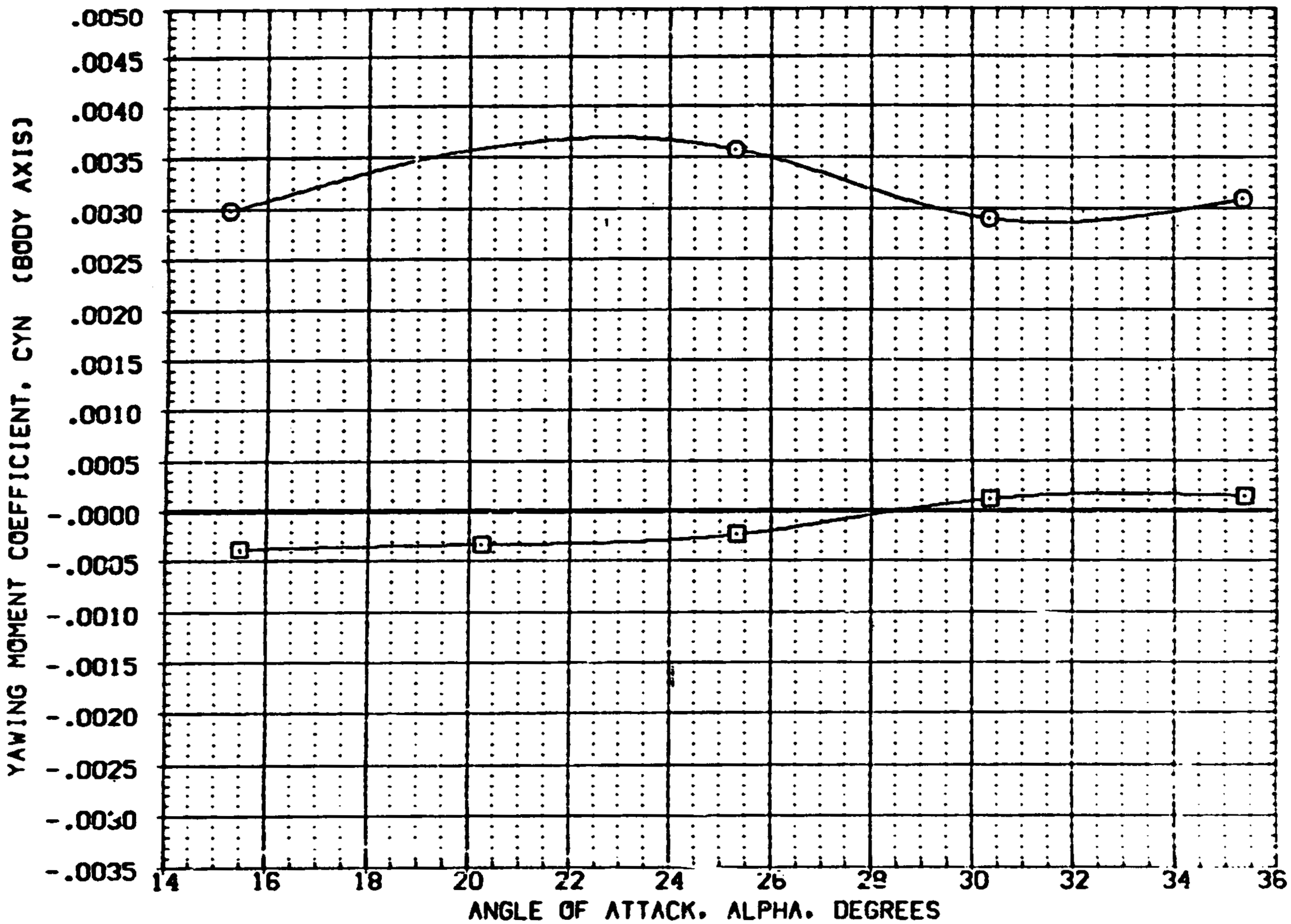


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N07)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	294.000
(XB5F07)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

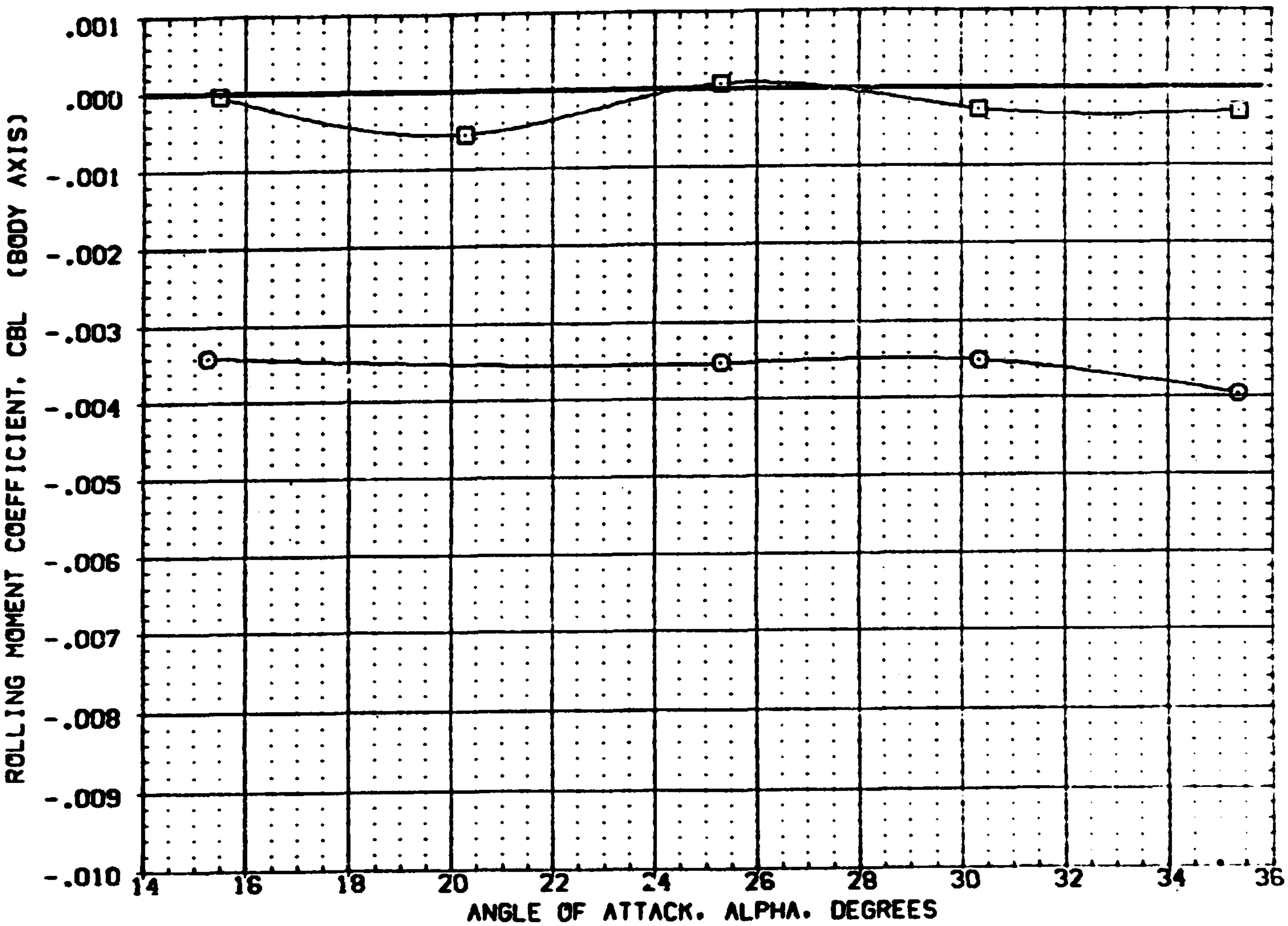


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N08)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-20.000	-14.250	40.000	294.000
(XB5F08)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-20.000	-14.250	40.000	.000

REFERENCE	INFORMATION	
SREF	1.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

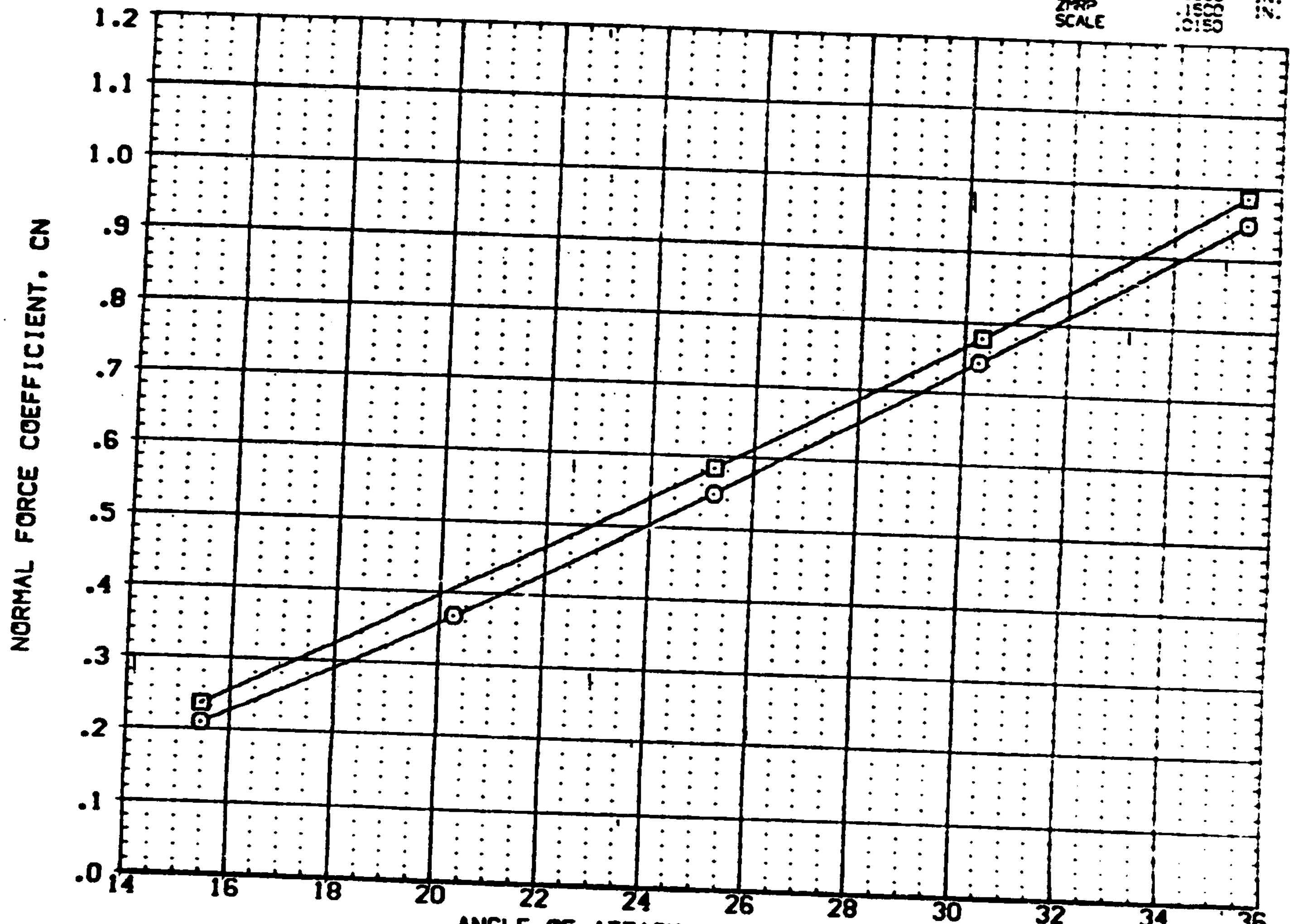


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N08)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-20.000	-14.250	40.000	294.000
(XB5F08)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

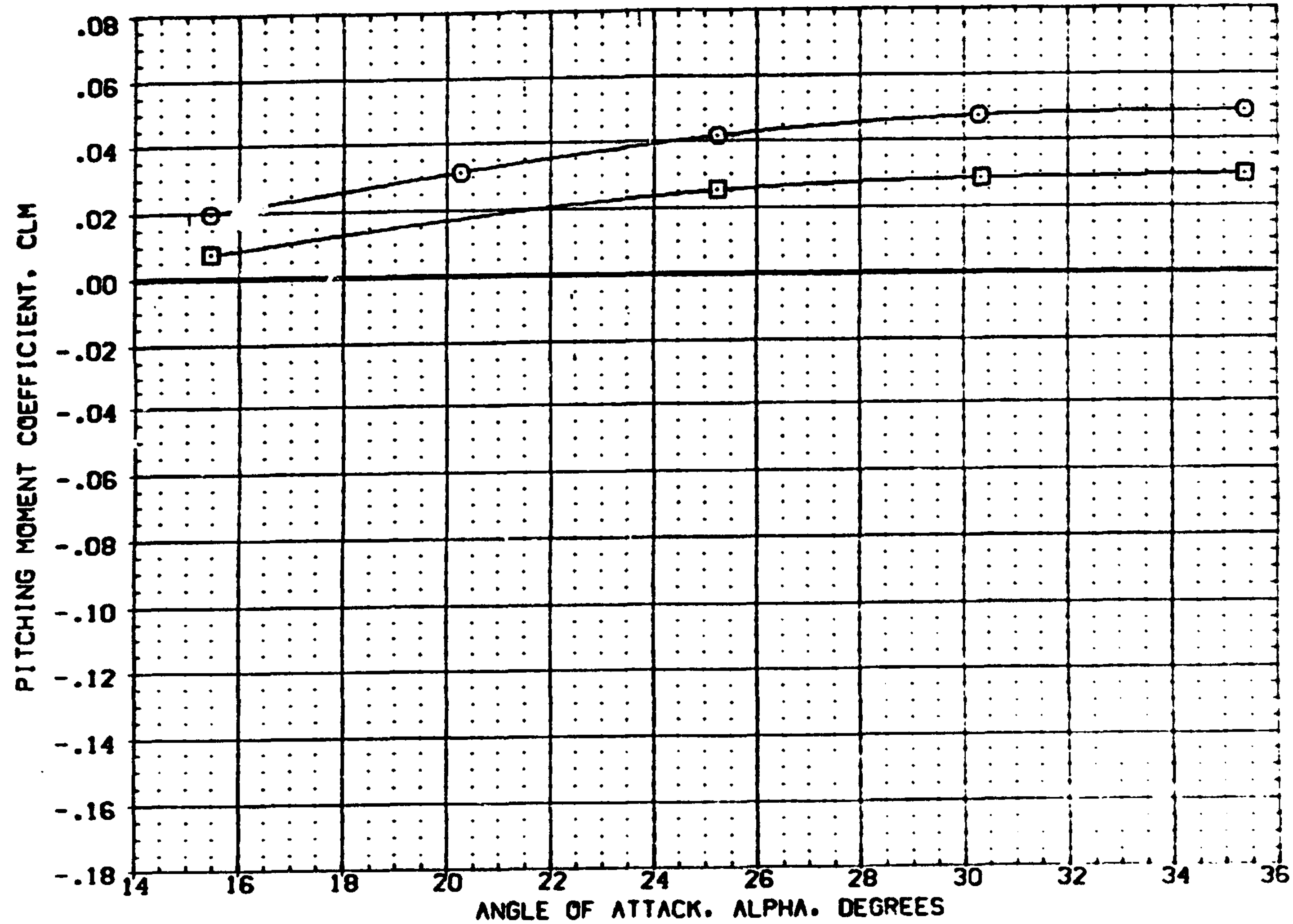


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N08)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-20.000	-14.250	40.000	294.000
(XB5F08)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

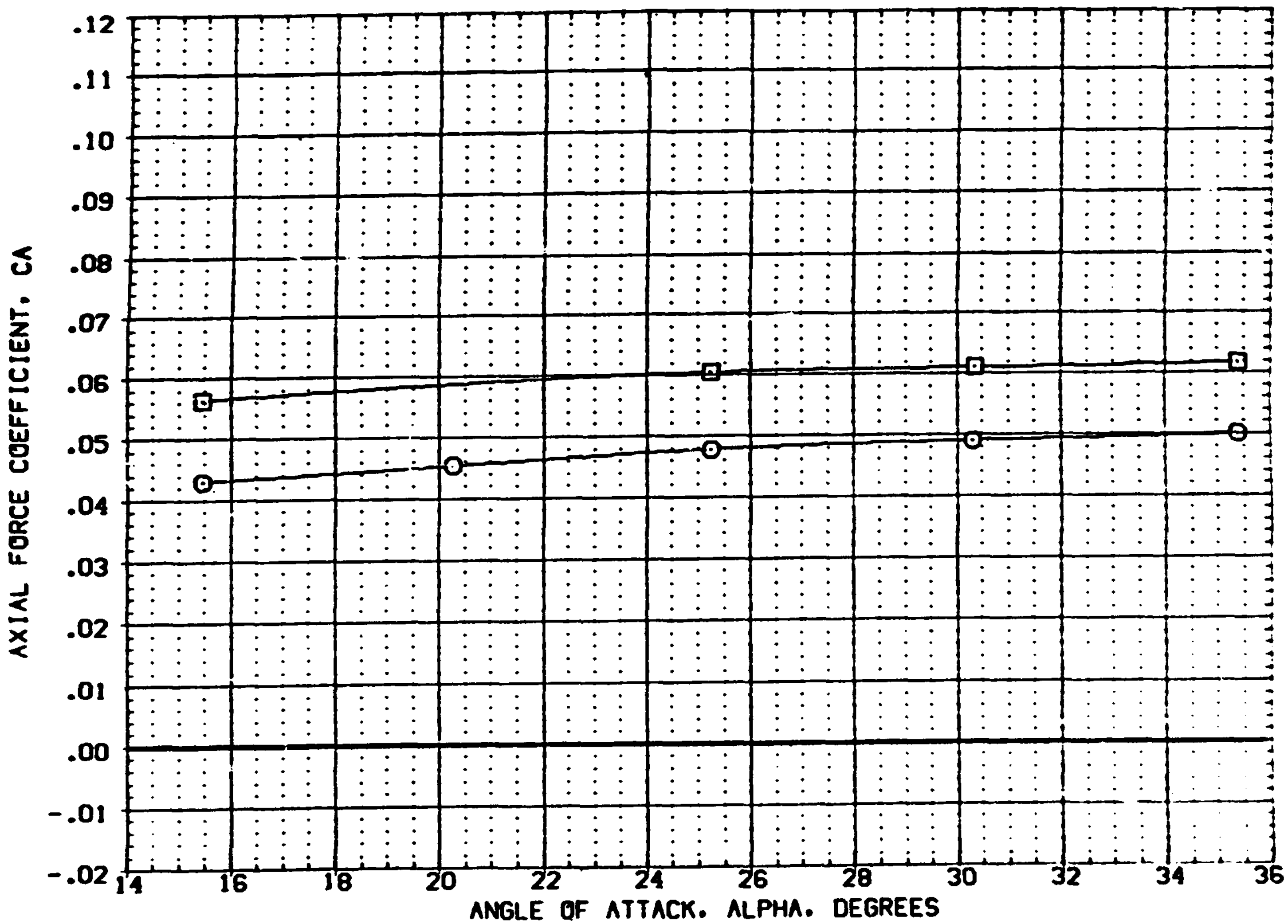


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

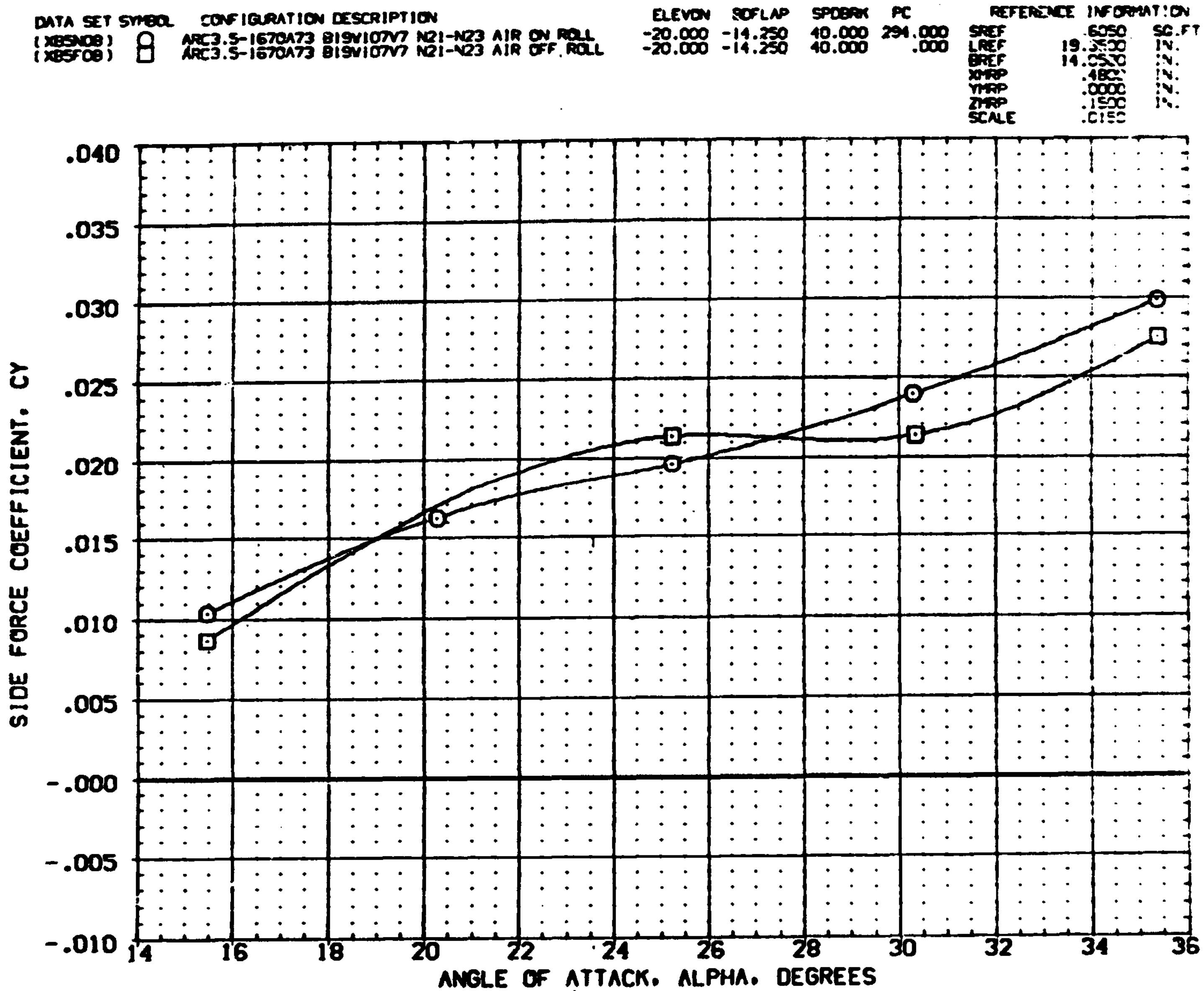


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

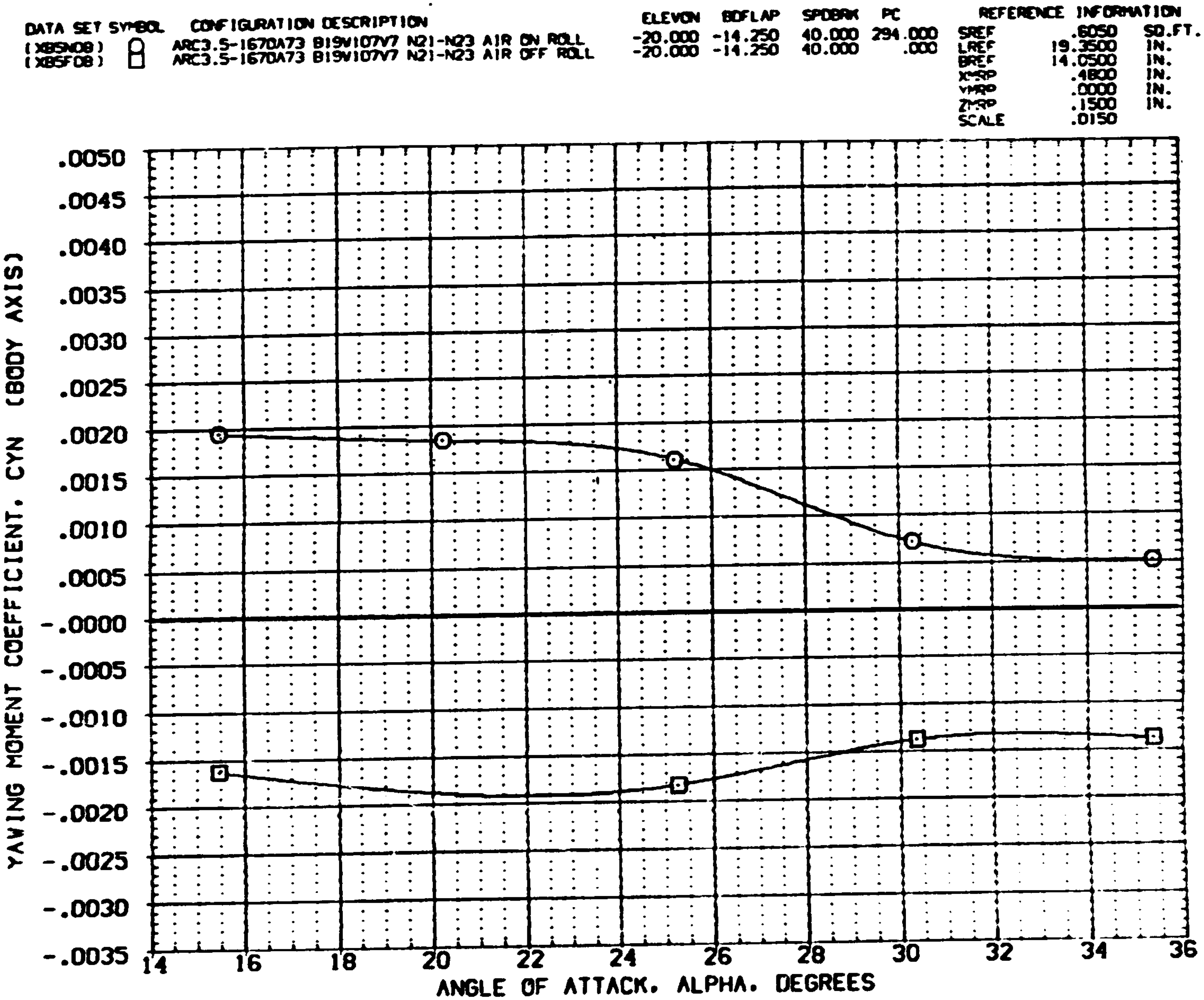


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N08)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-20.000	-14.250	40.000	294.000
(XB5F08)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

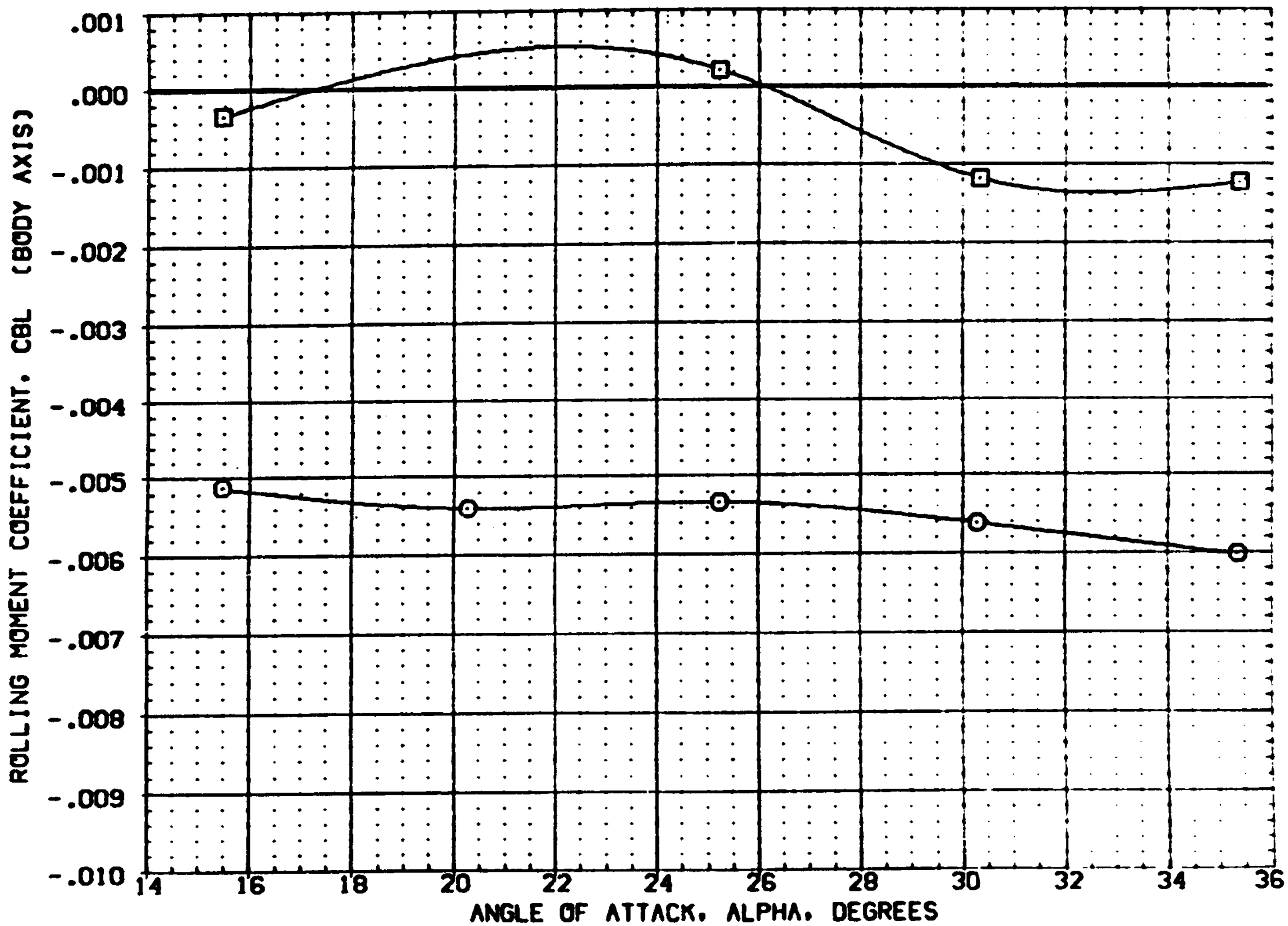


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

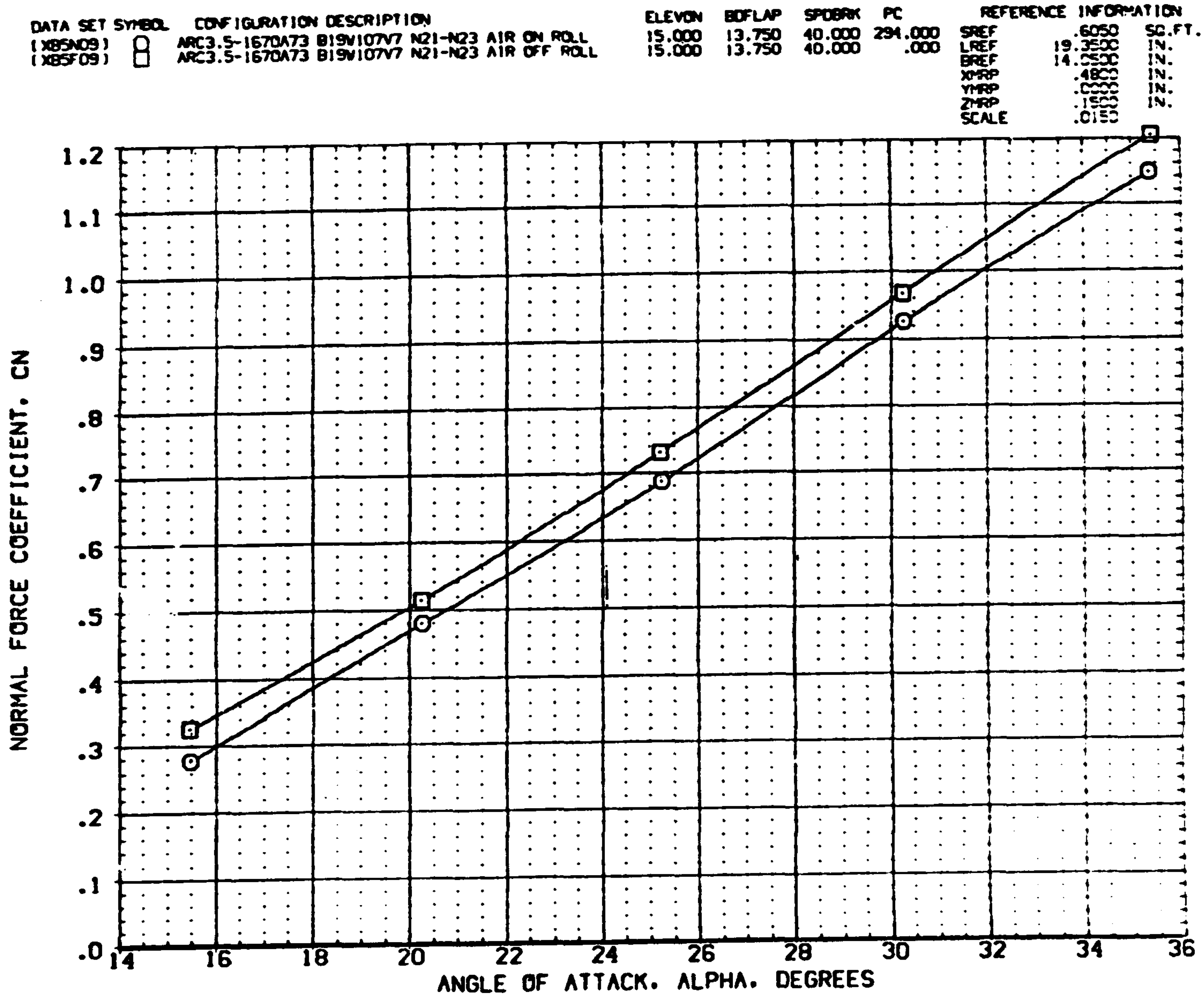


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XBSN09)	○	ARC3.5-167CA73 B19V107V7 N21-N23 AIR ON ROLL	15.000	13.750	40.000	294.000
(XBSF09)	□	ARC3.5-167CA73 B19V107V7 N21-N23 AIR OFF ROLL	15.000	13.750	40.000	.000

REFERENCE INFORMATION

SREF	.6[illegible]	SQ.FT.
LREF	19.[illegible]	[illegible]
BREF	14.[illegible]	[illegible]
XMRP	.45[illegible]	[illegible]
YMRP	[illegible]	[illegible]
ZMRP	[illegible]	[illegible]
SCALE	.01[illegible]	

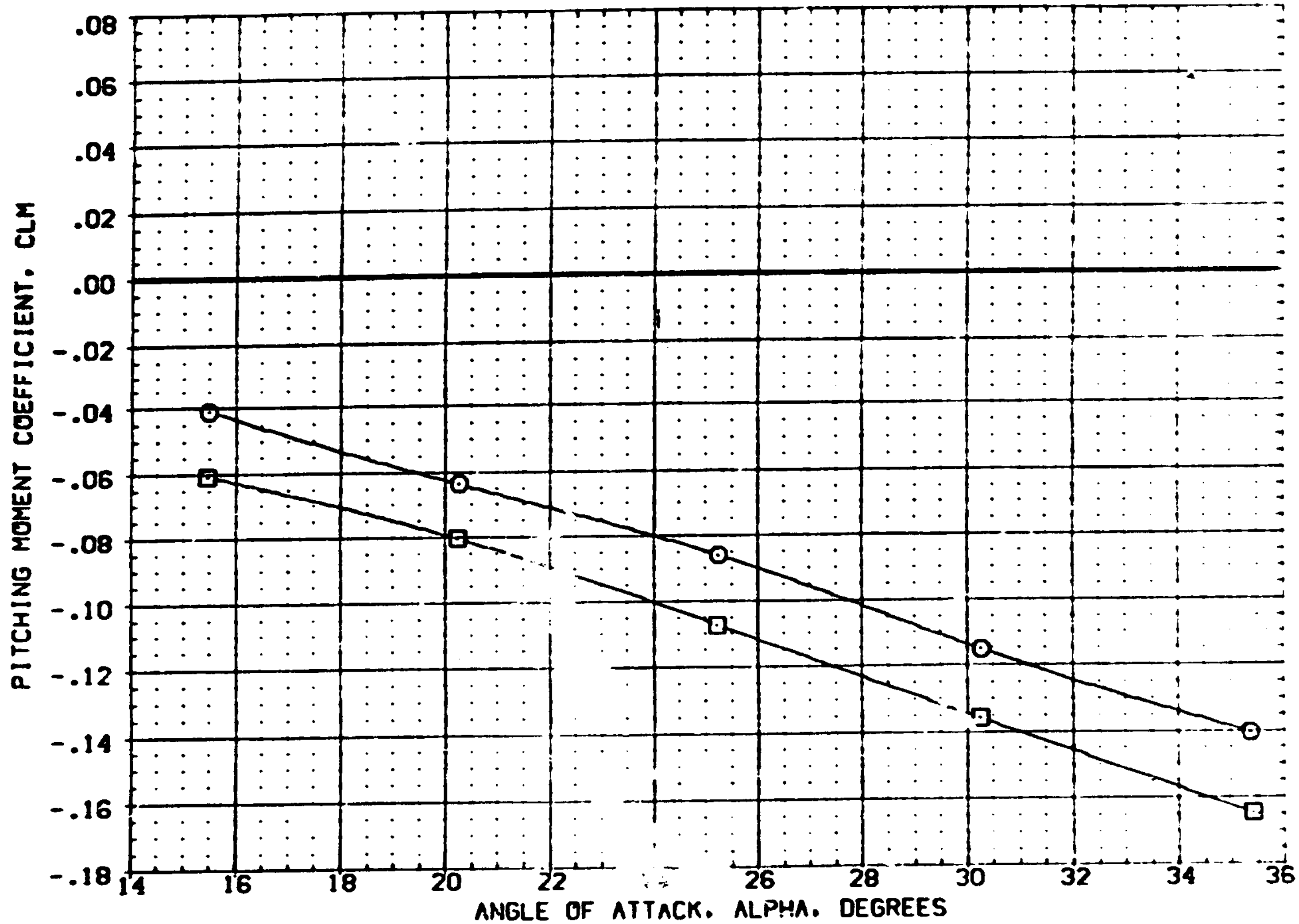


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

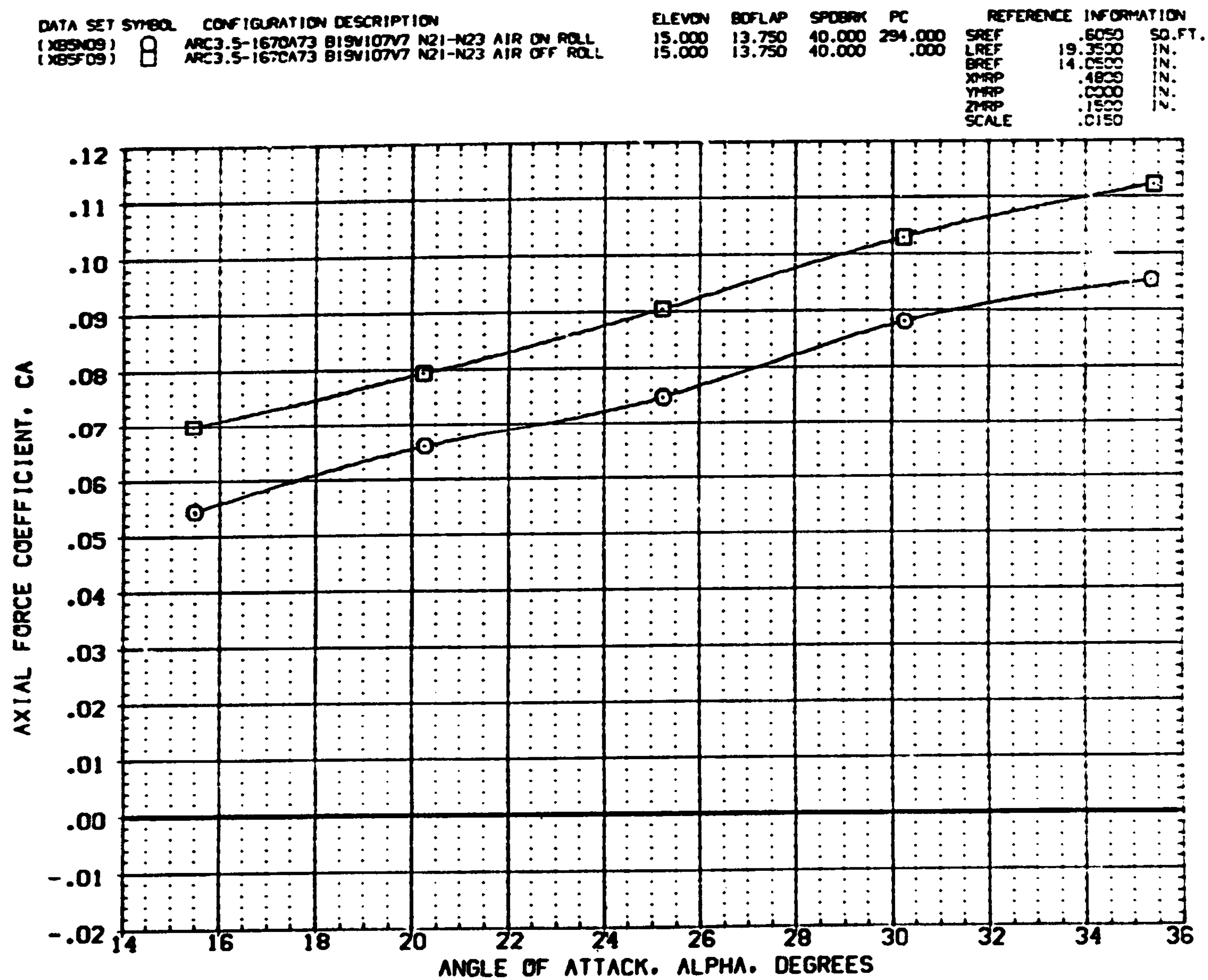


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N09)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	15.000	13.750	40.000	294.000
(XB5F09)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	15.000	13.750	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

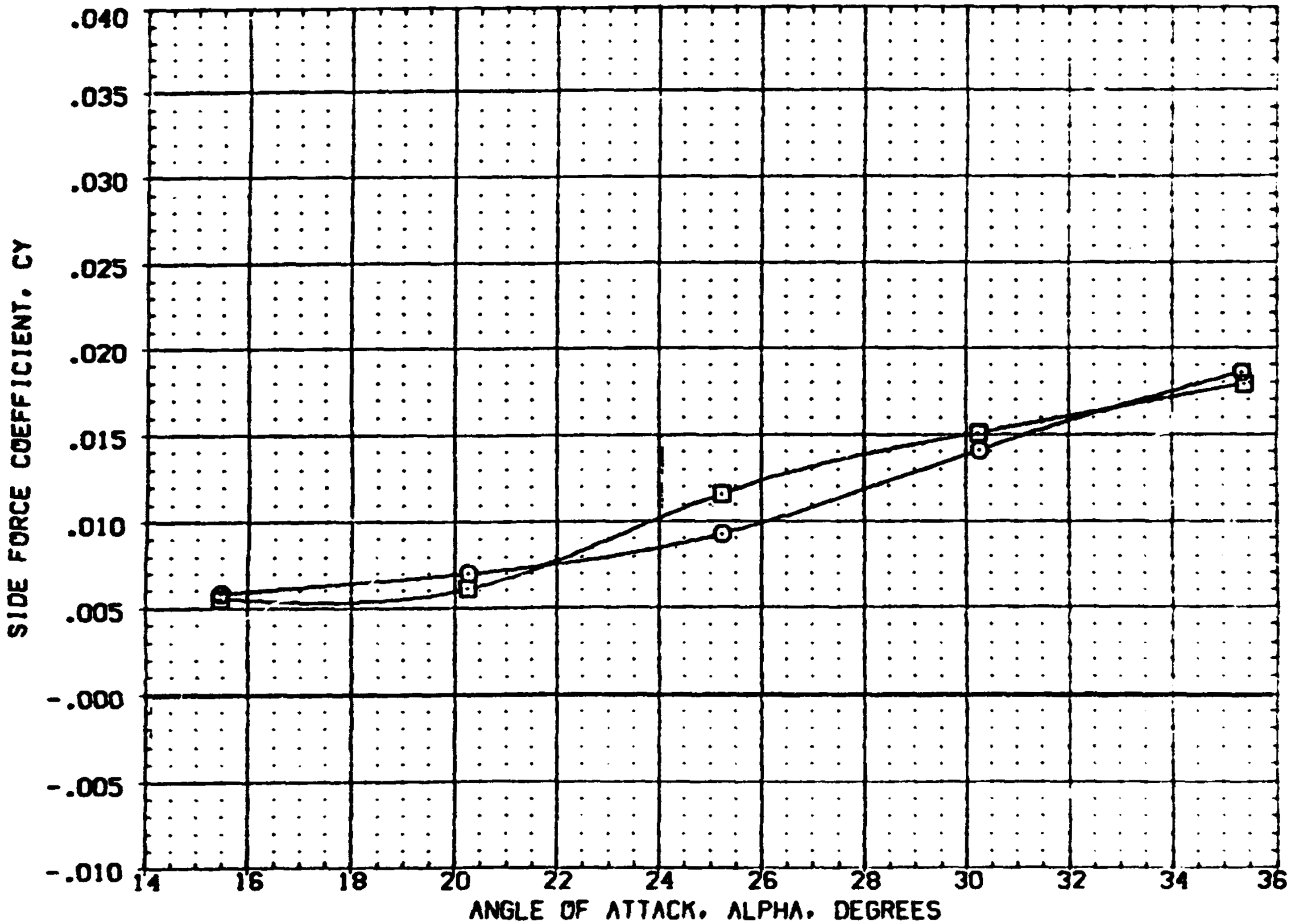


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

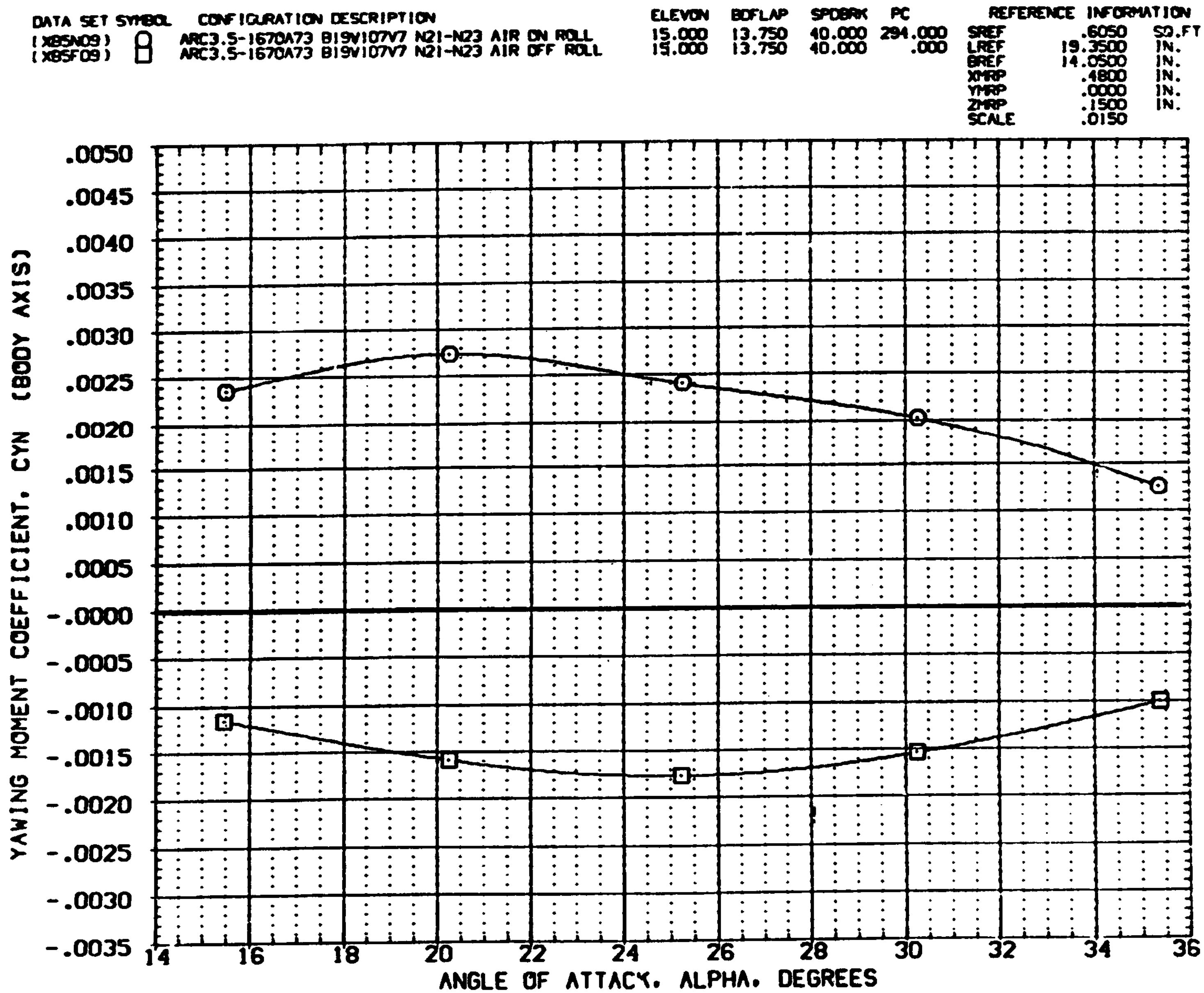


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

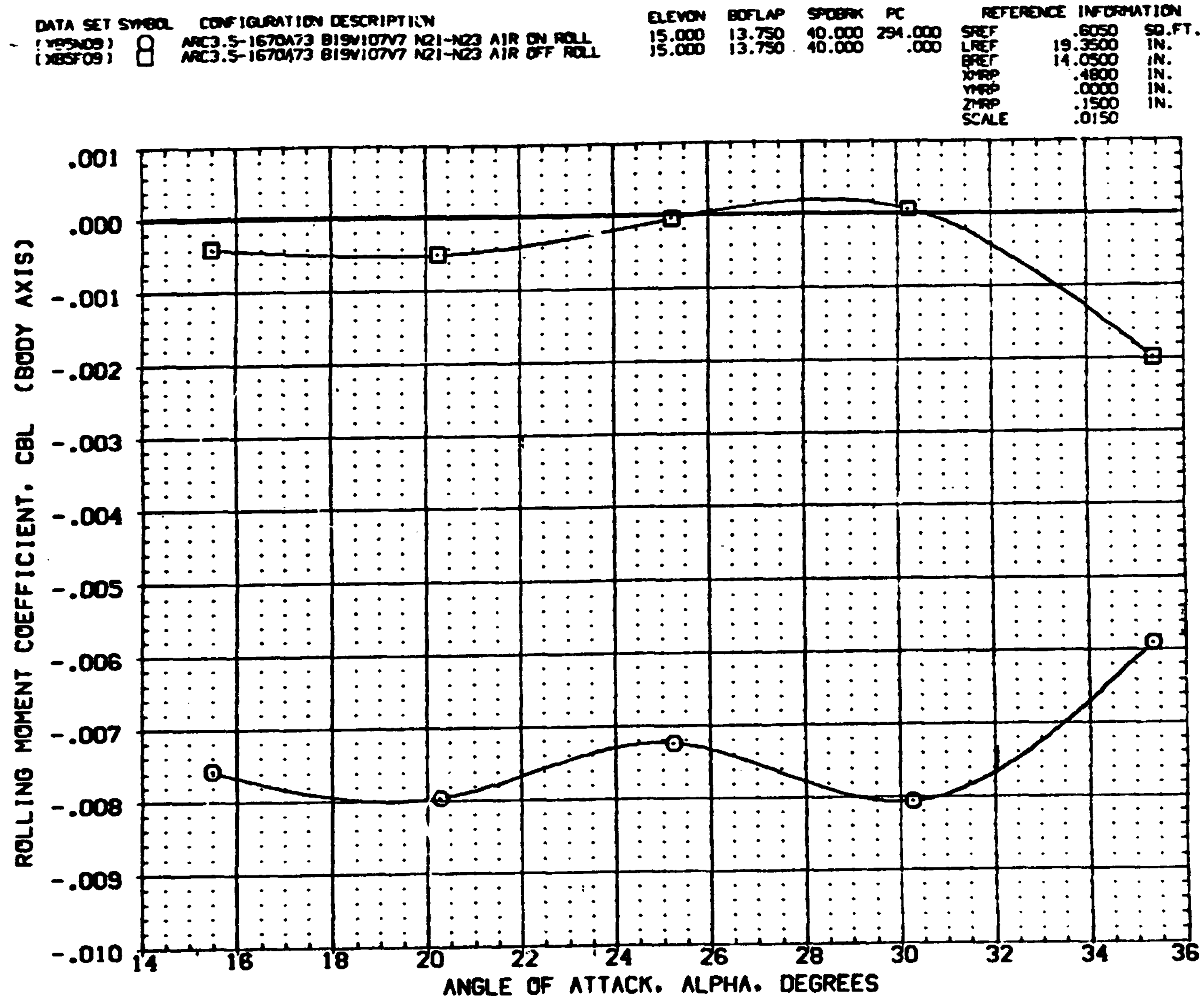


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

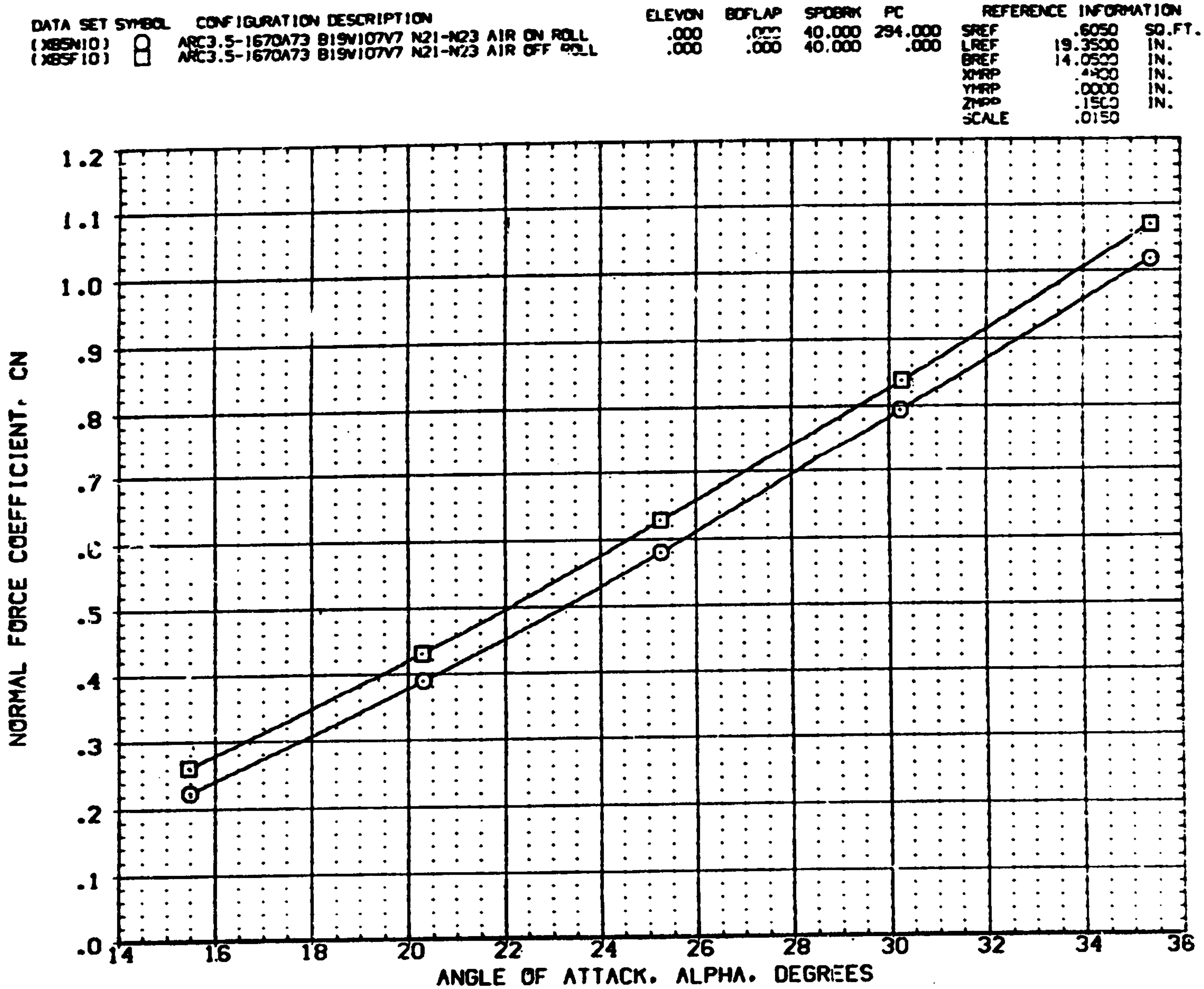


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

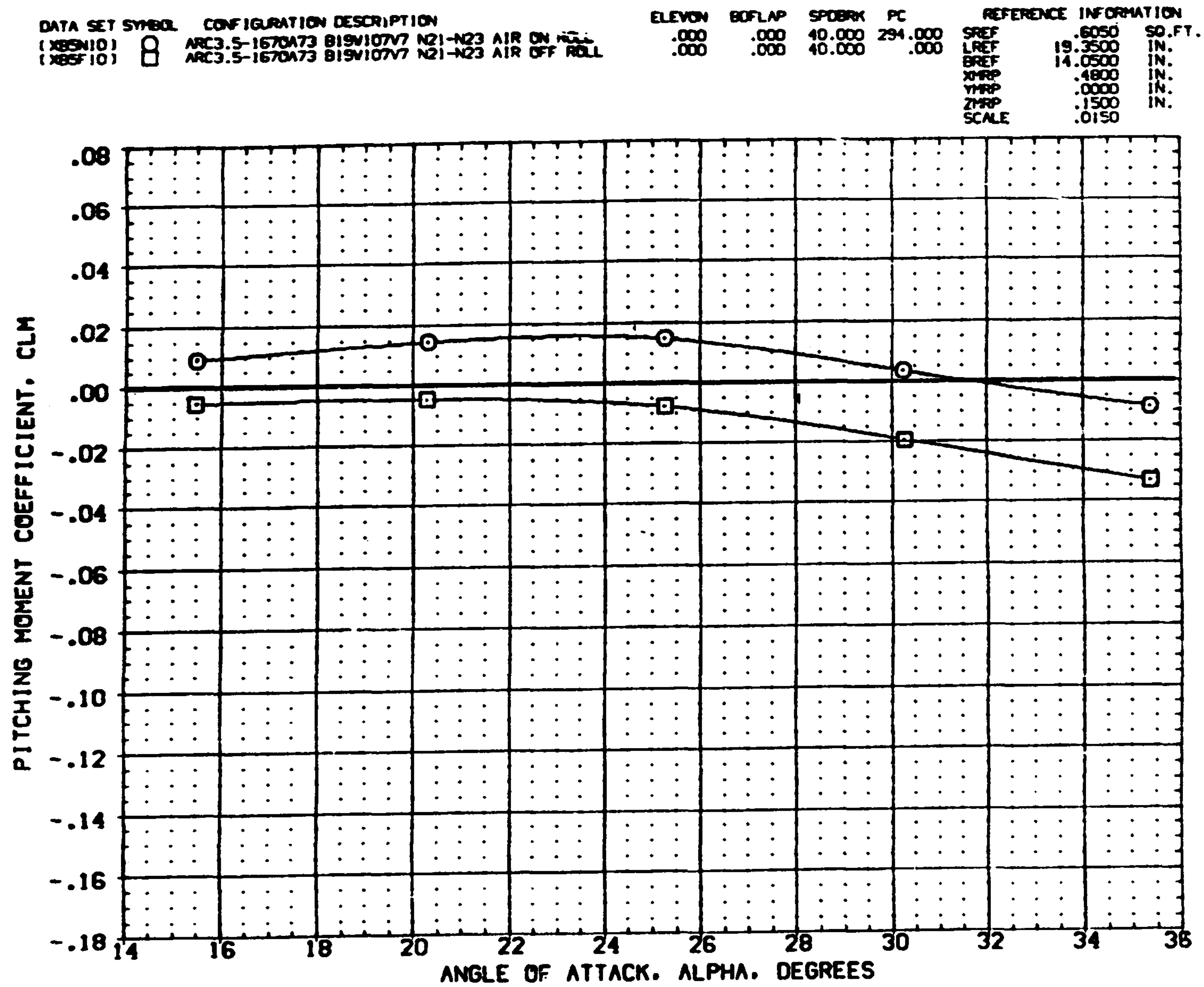


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N10)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	.000	.000	40.000	294.000
(XB5F10)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

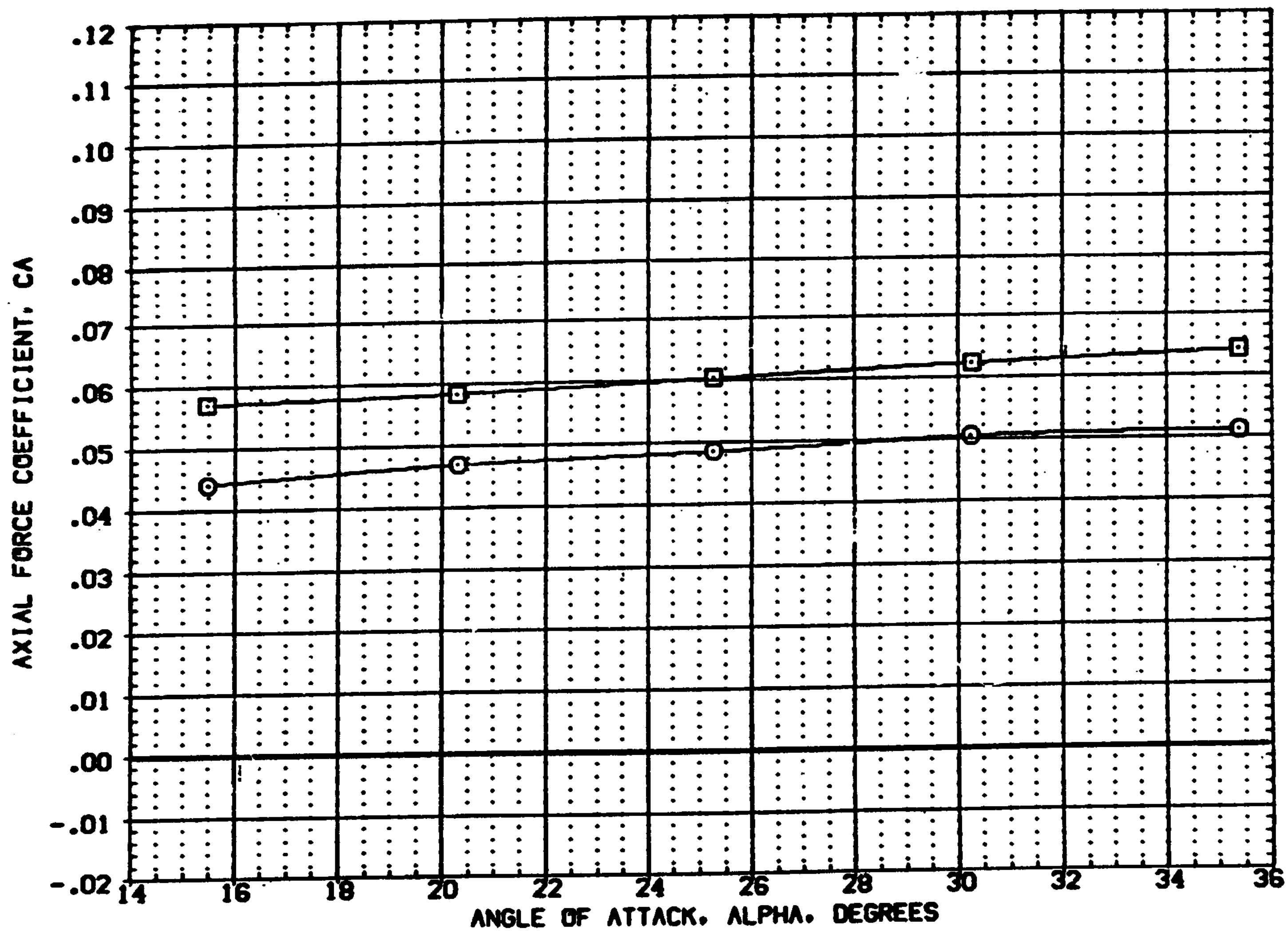


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.
(A)MACH = 10.29

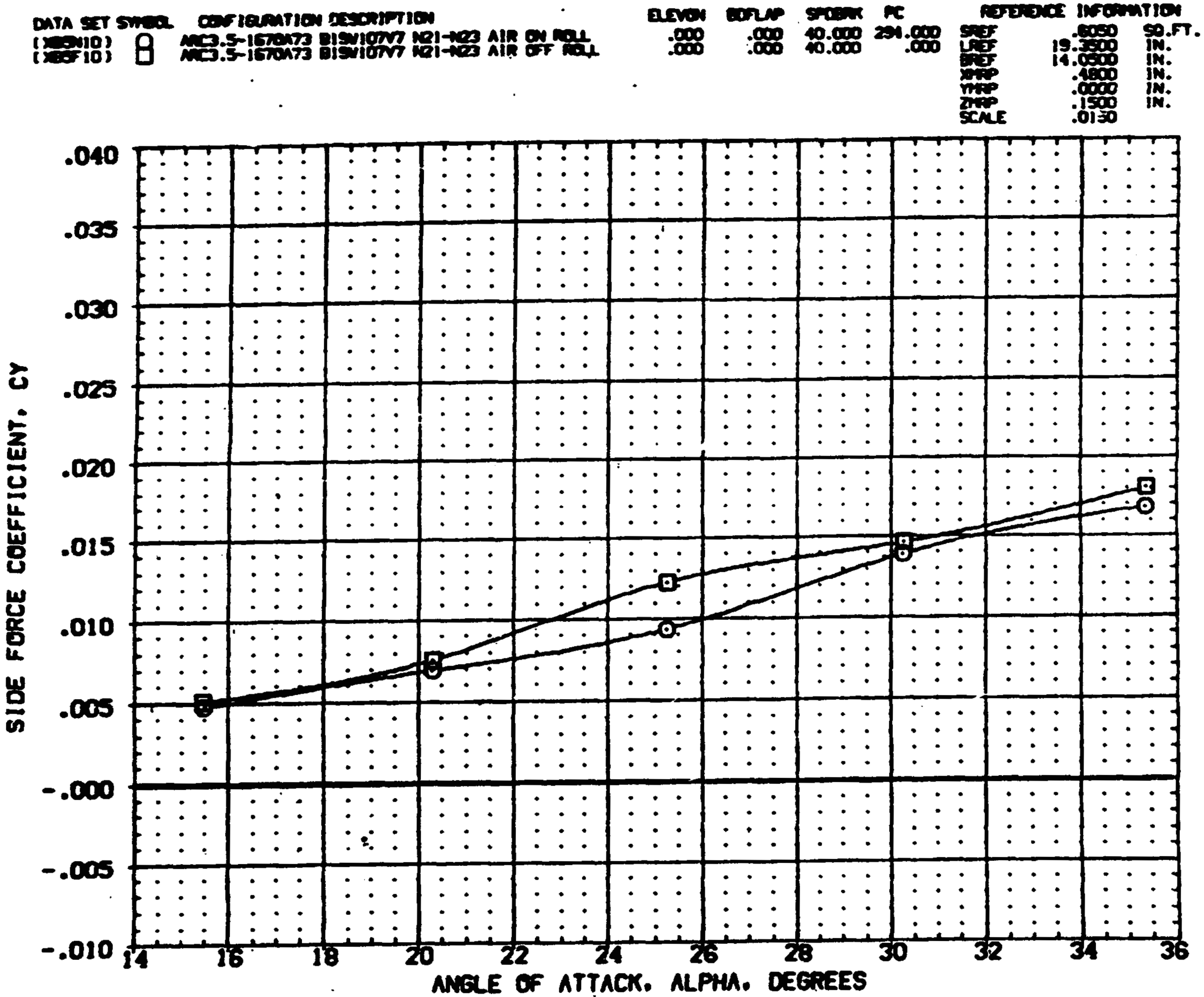


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N10)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	.000	.000	40.000	294.000
(XB5F10)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

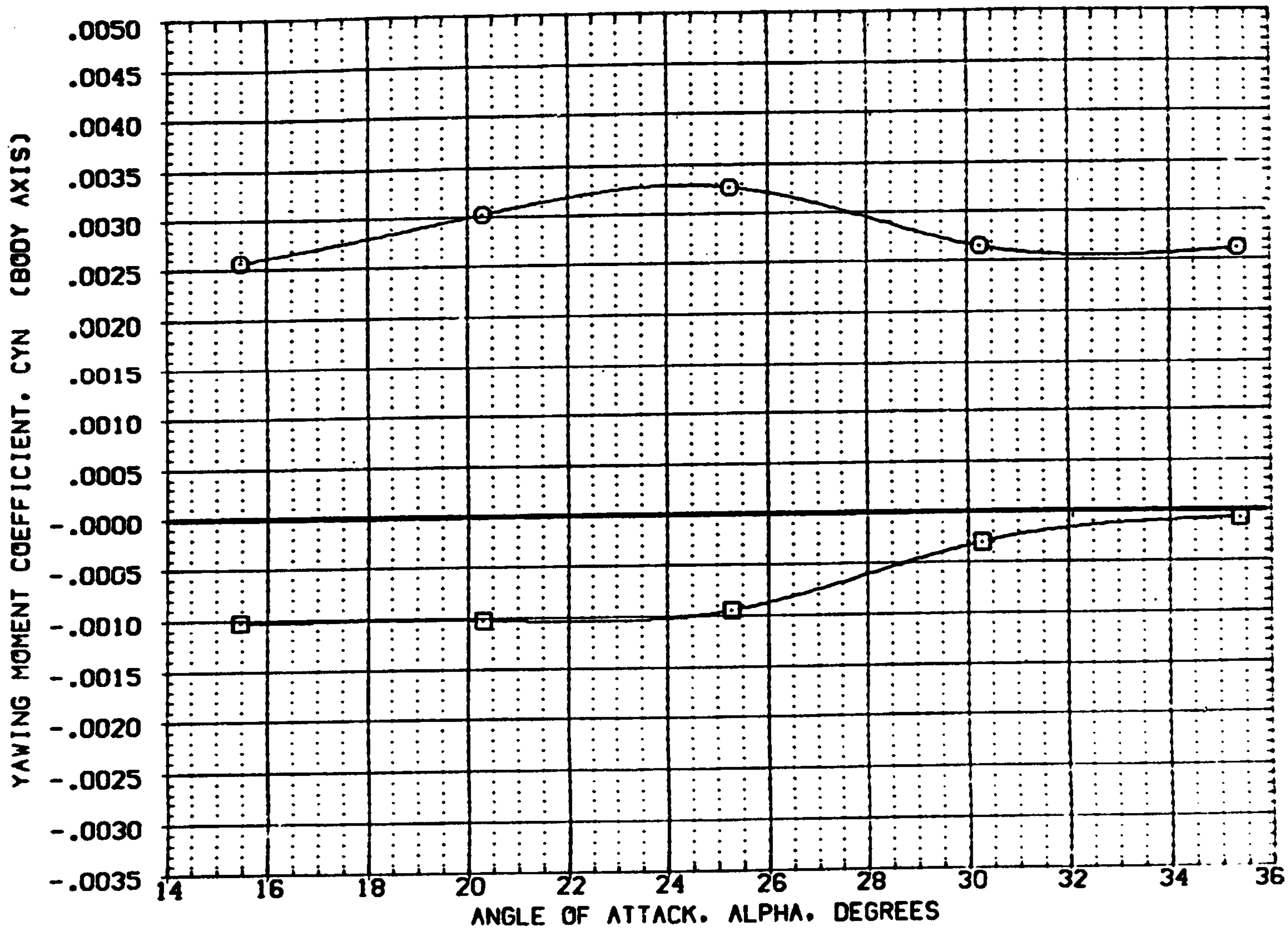


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

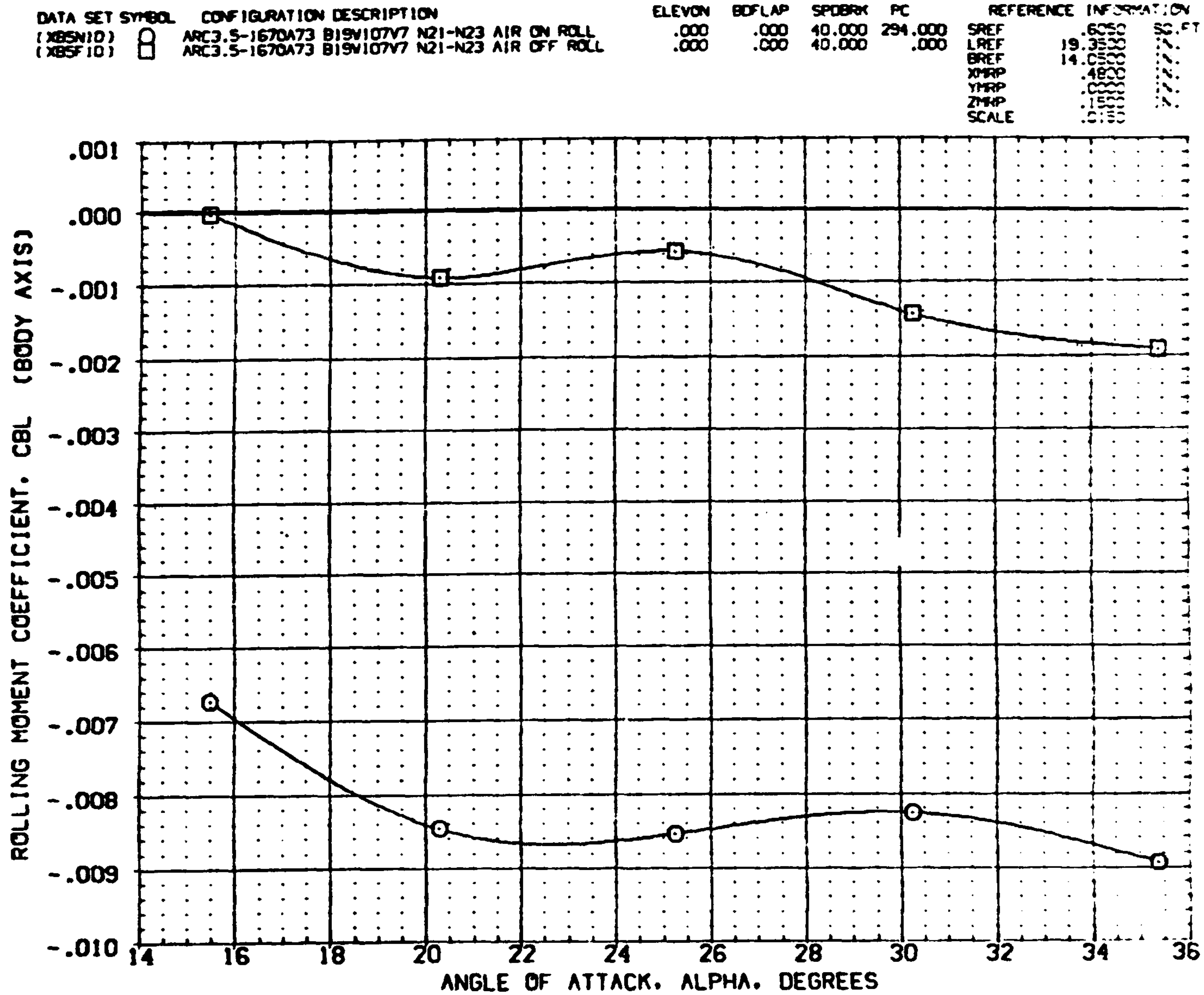


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N27)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	375.000
(XB5F27)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

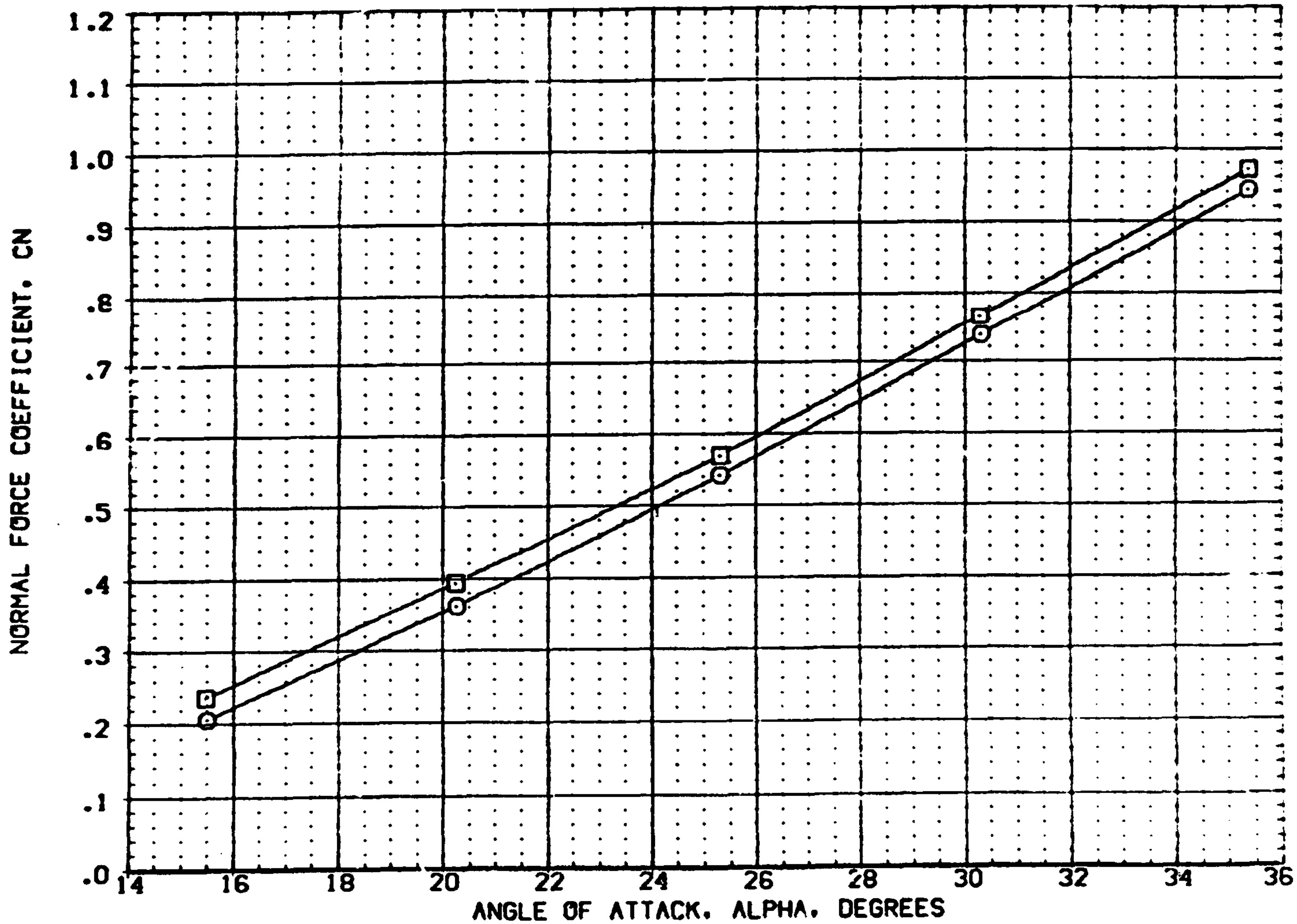


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

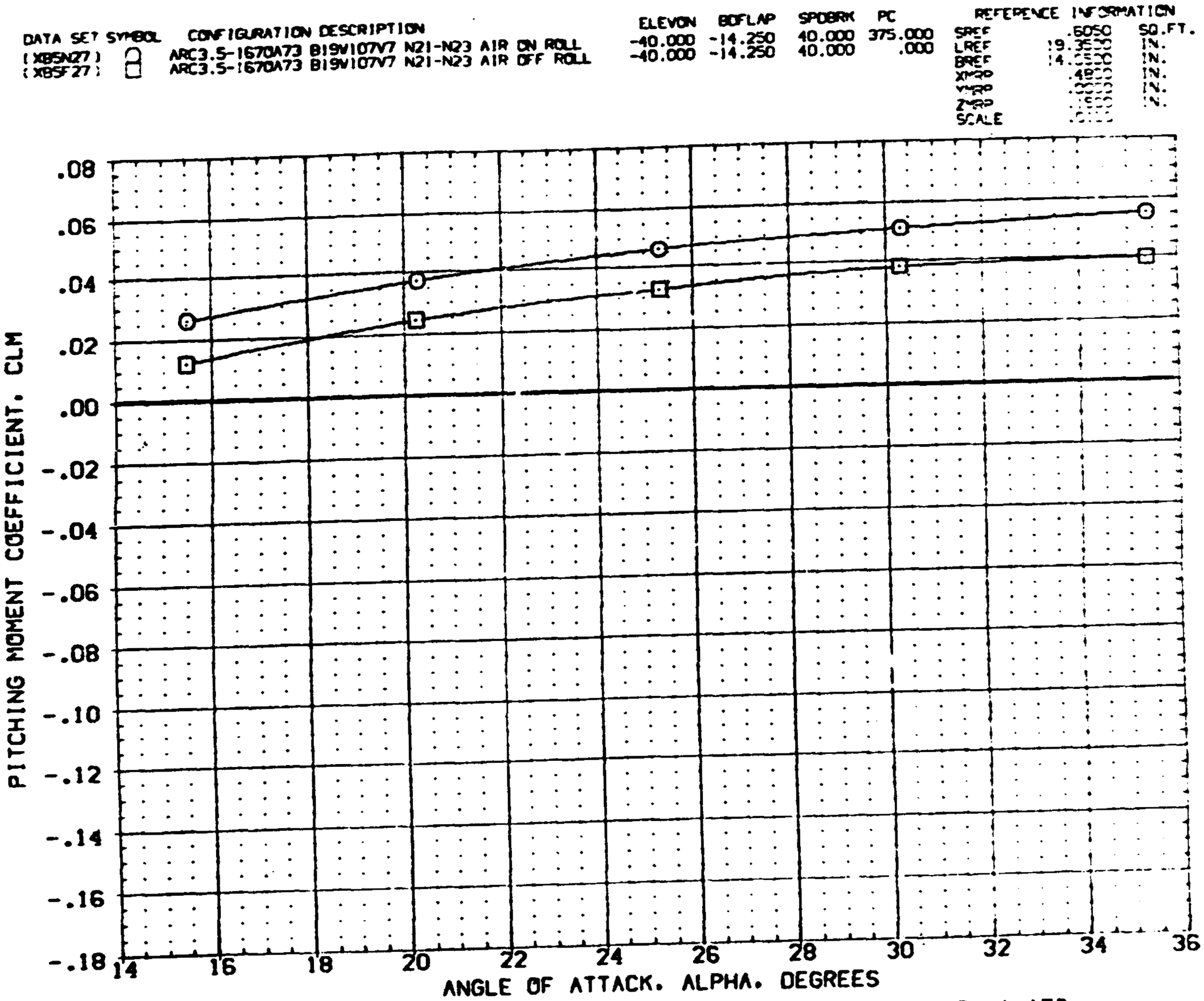


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N27)	○	ARC3.5-167OA73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	375.000
(XB5F27)	□	ARC3.5-167OA73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

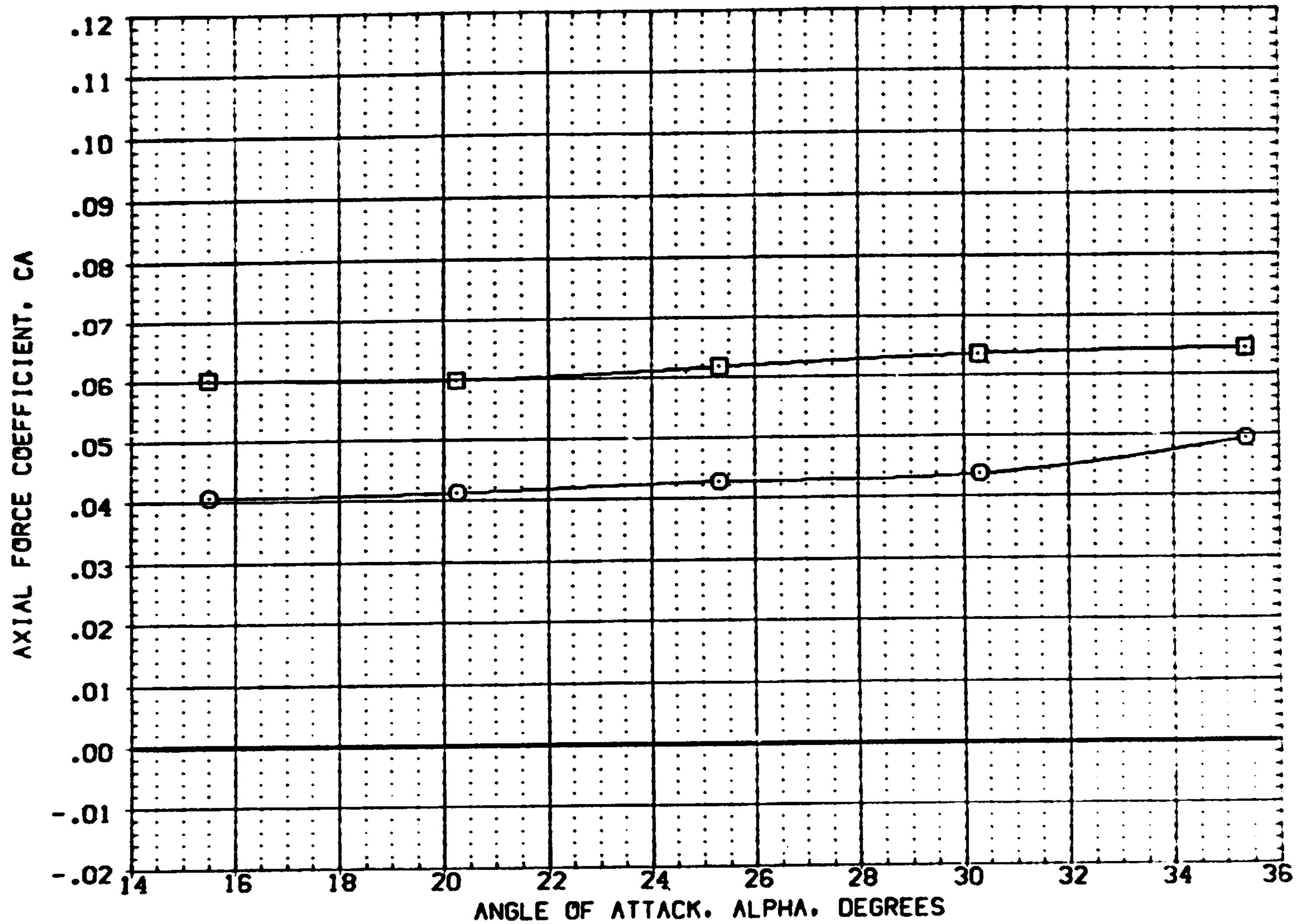


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

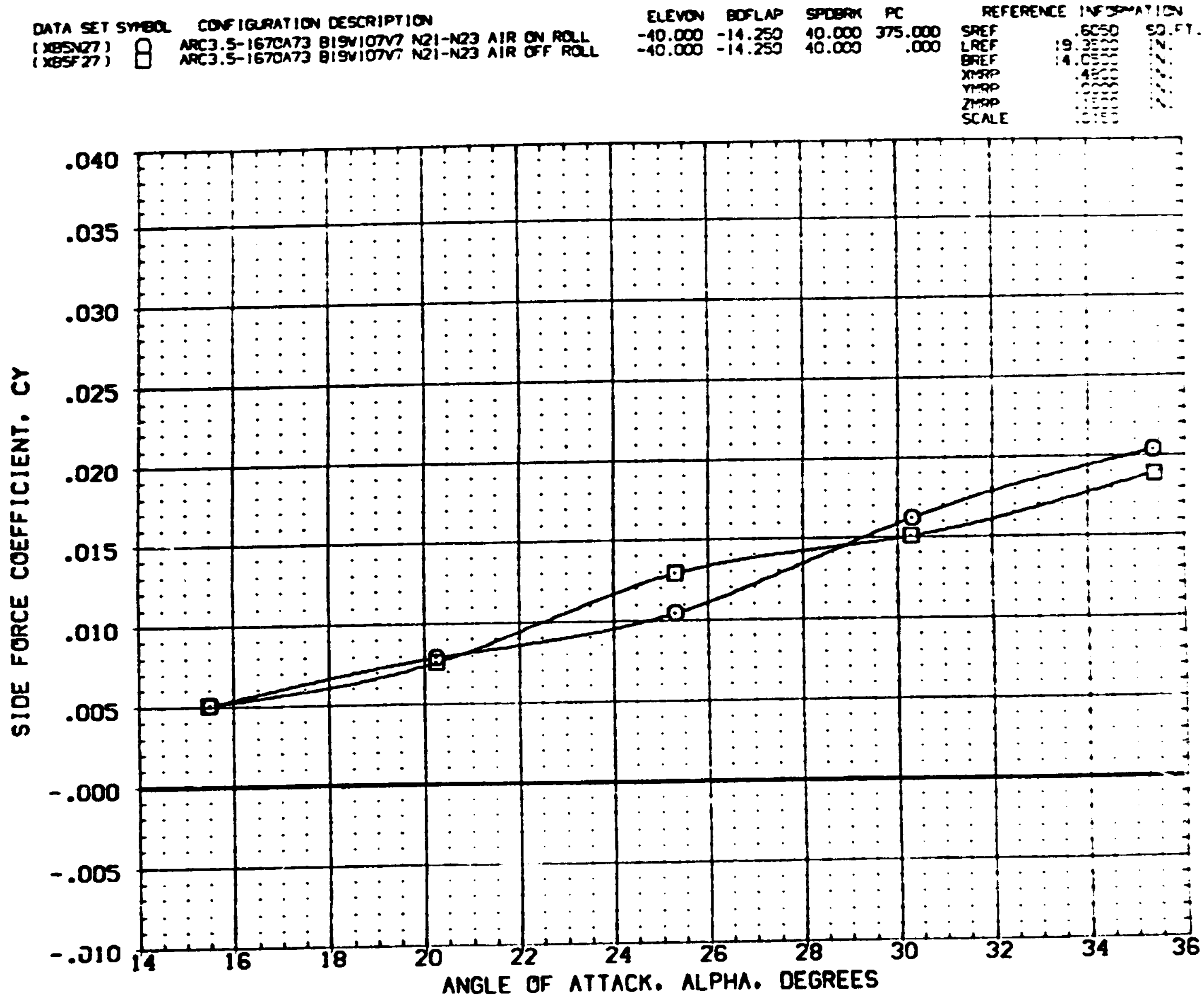


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XBSN27)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	375.000
(XBSF27)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	[illegible]	SQ.FT.
LREF	19.[illegible]	IN.
BREF	14.[illegible]	IN.
XMRP	.4800	IN.
YMRP	[illegible]	IN.
ZMRP	[illegible]	IN.
SCALE	[illegible]	

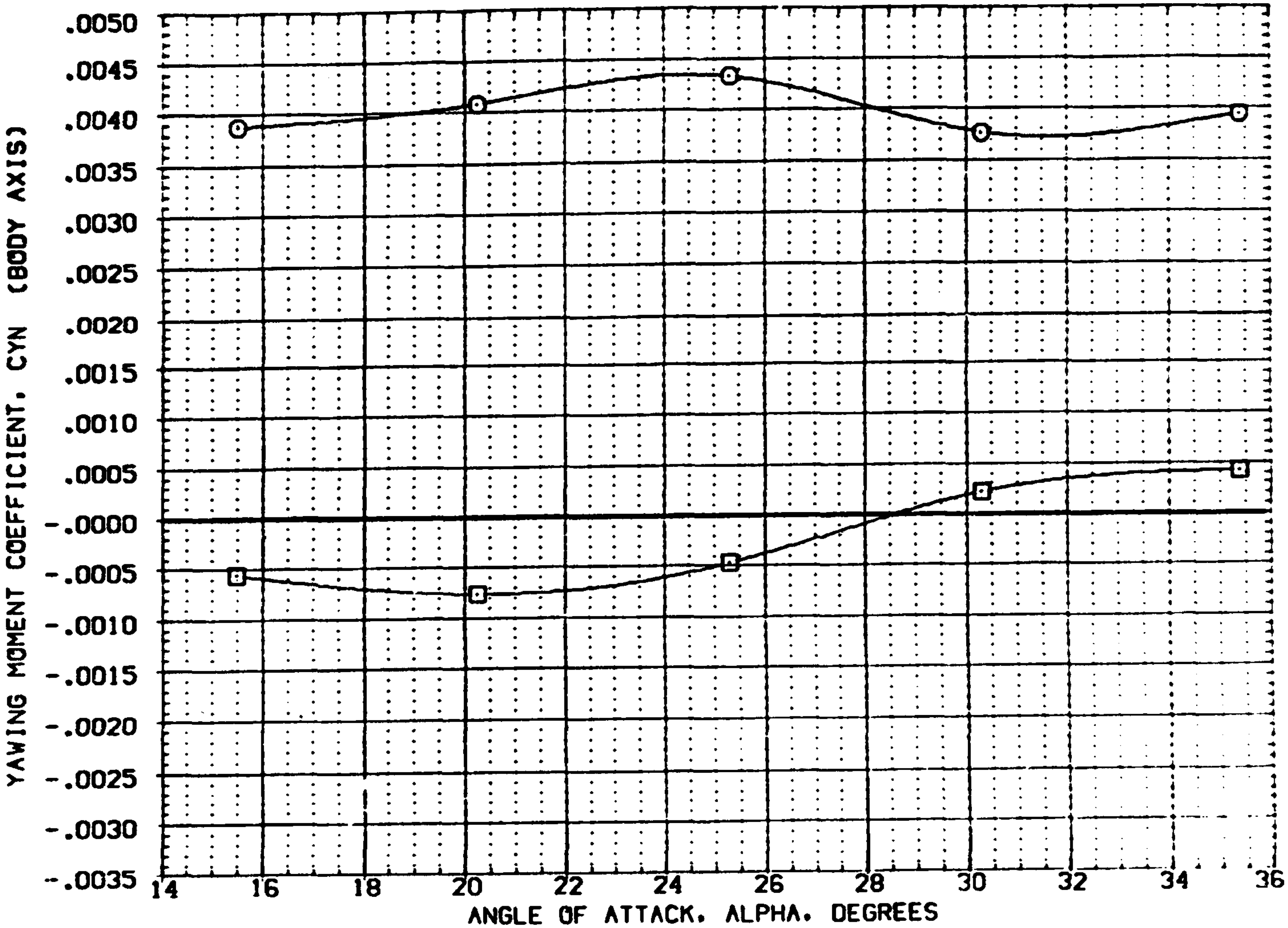


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N27)	○	ARC3.5-1670A73 B19V107V7 N21-N23 AIR ON ROLL	-40.000	-14.250	40.000	375.000
(XB5F27)	□	ARC3.5-1670A73 B19V107V7 N21-N23 AIR OFF ROLL	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

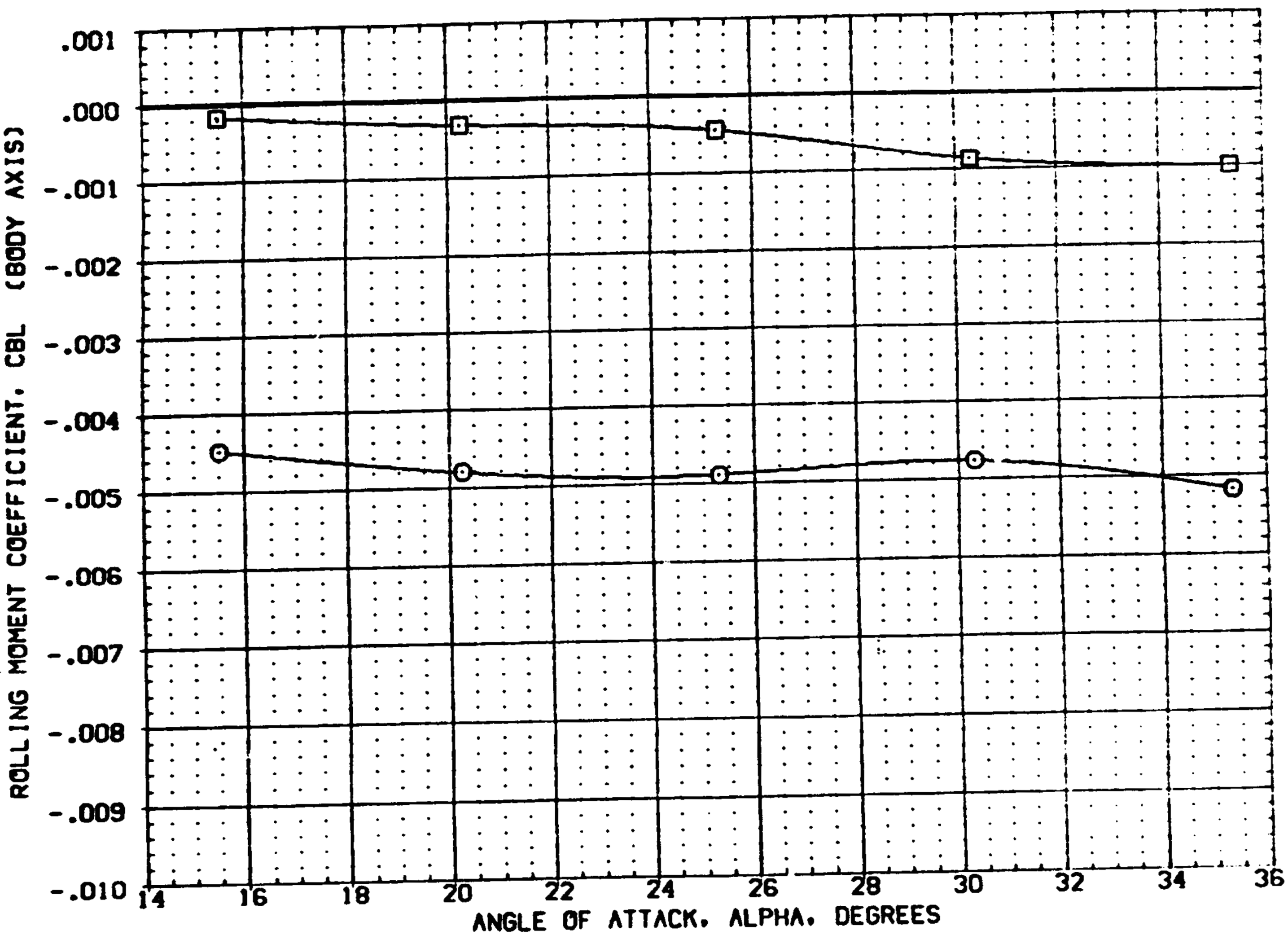


FIG. 5 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (ROLL), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N16)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	-40.000	-14.250	40.000	278.000
(XB5F16)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

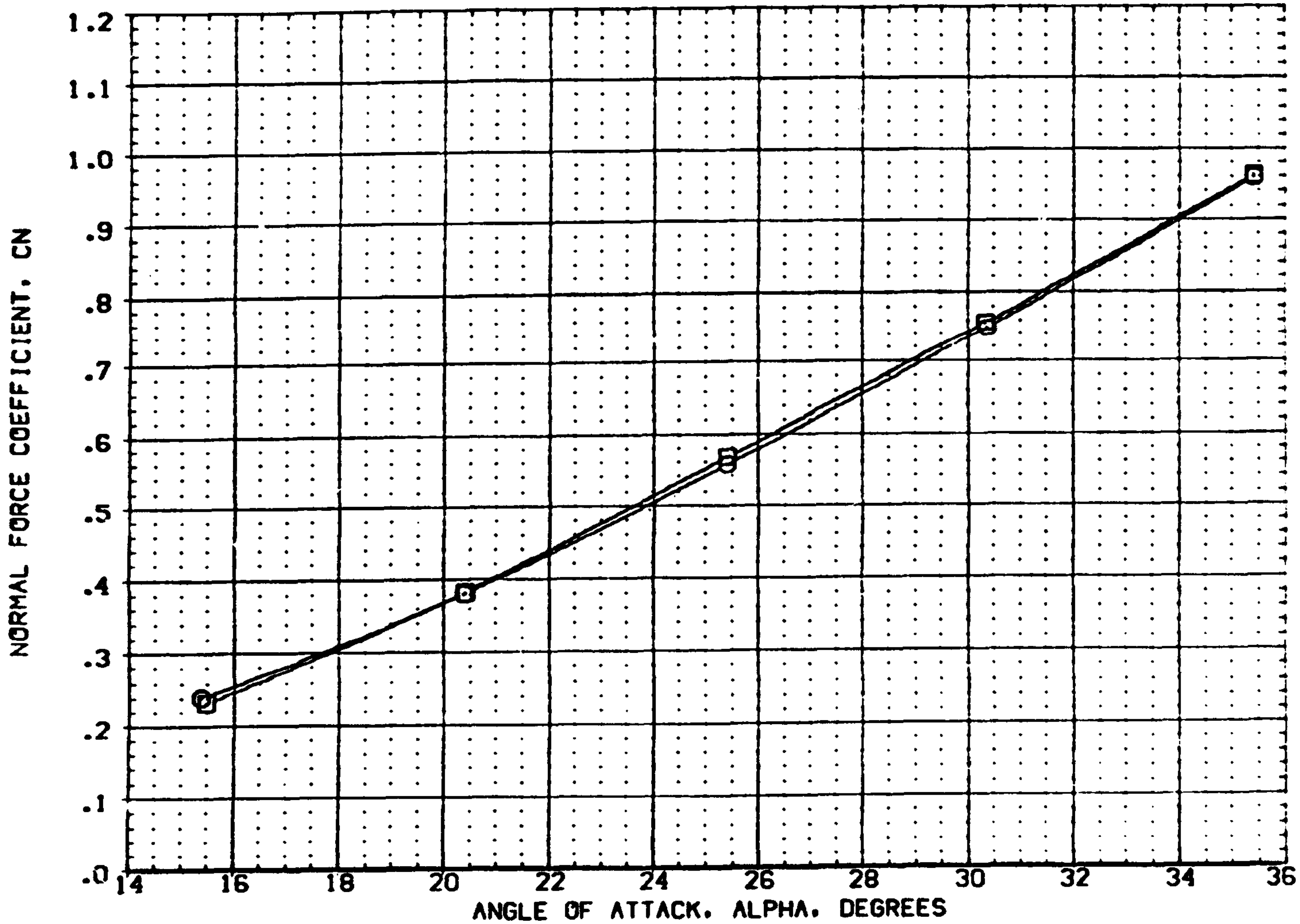


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

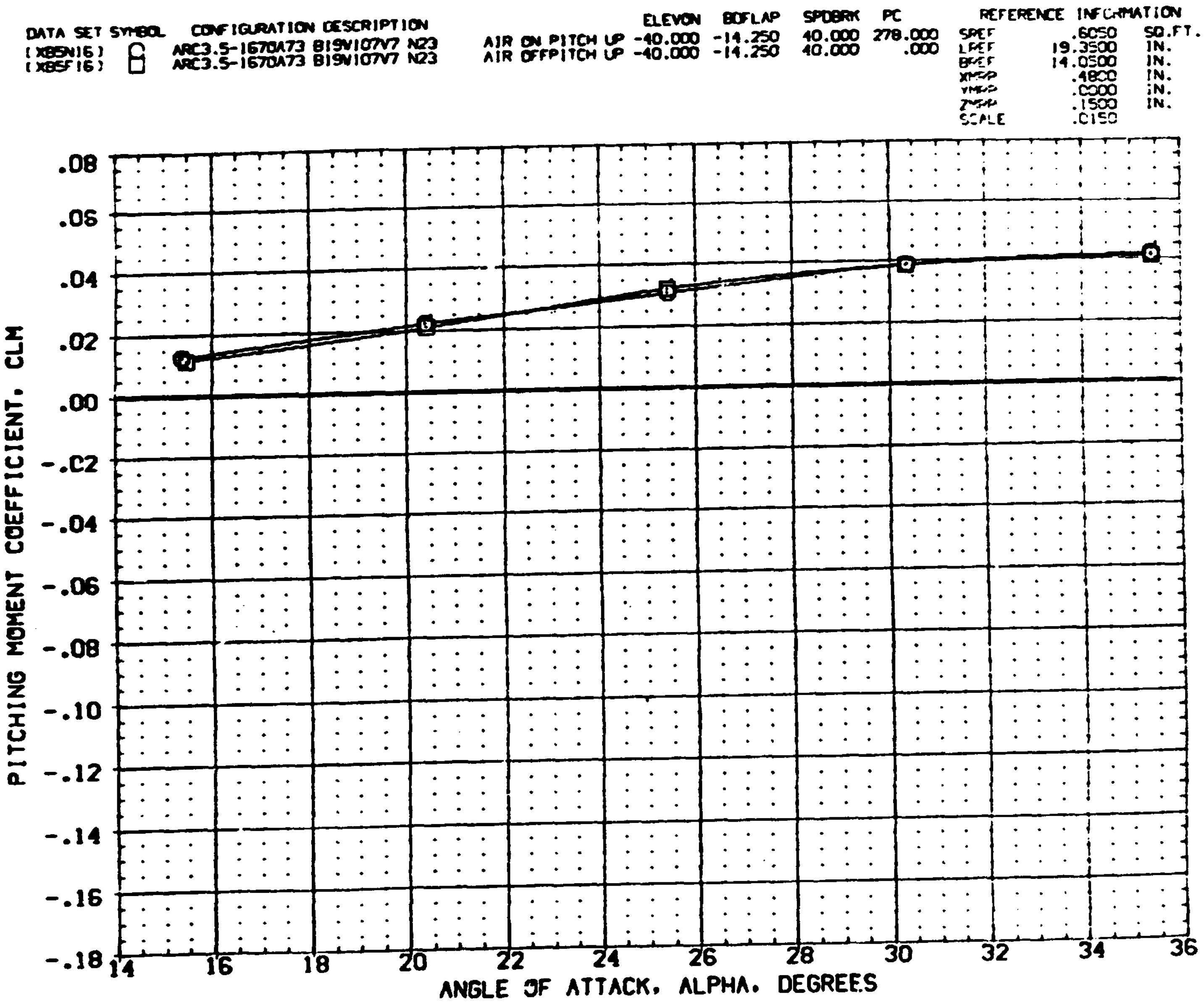


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

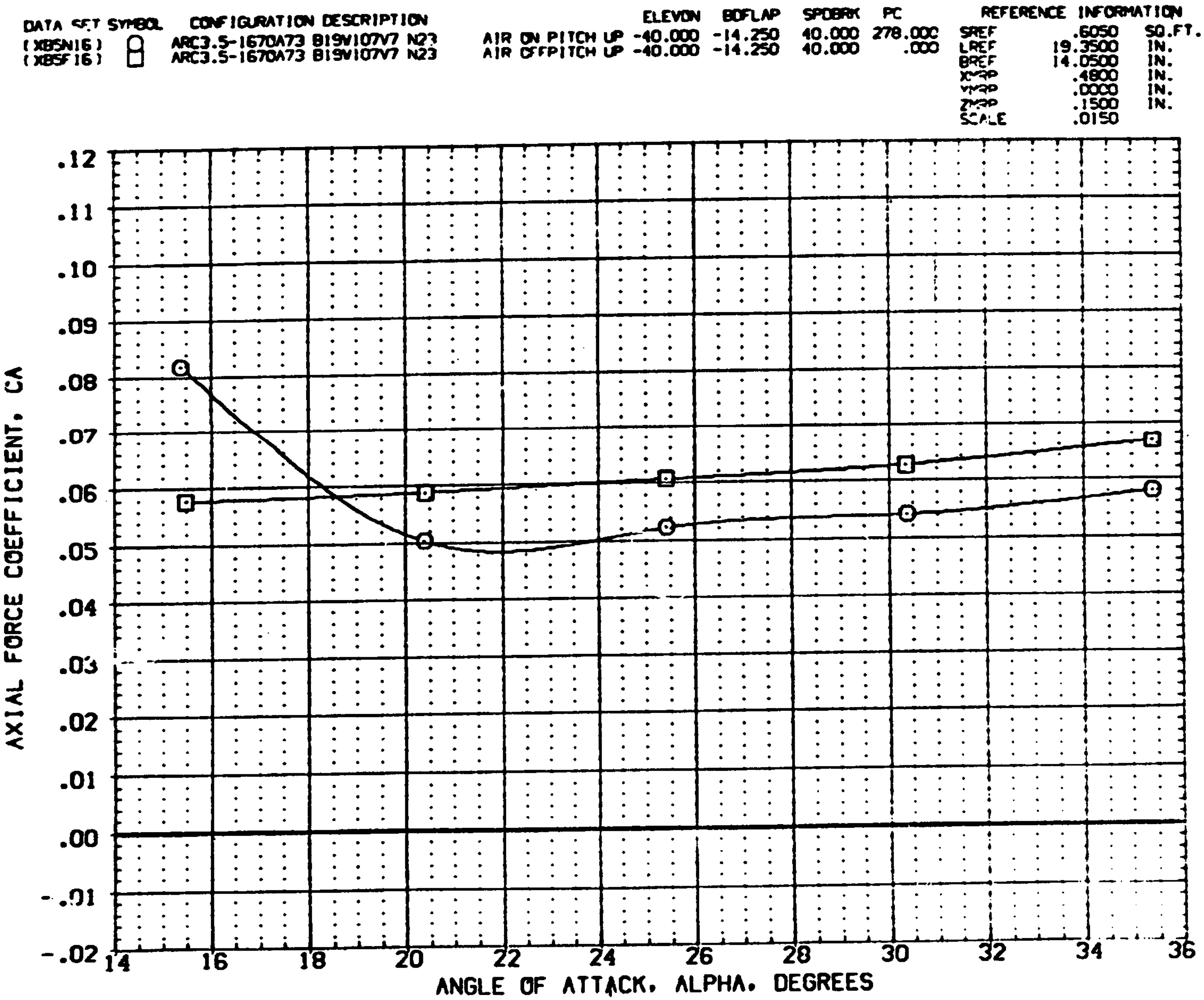


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N16)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	-40.000	-14.250	40.000	278.000
(XB5F16)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

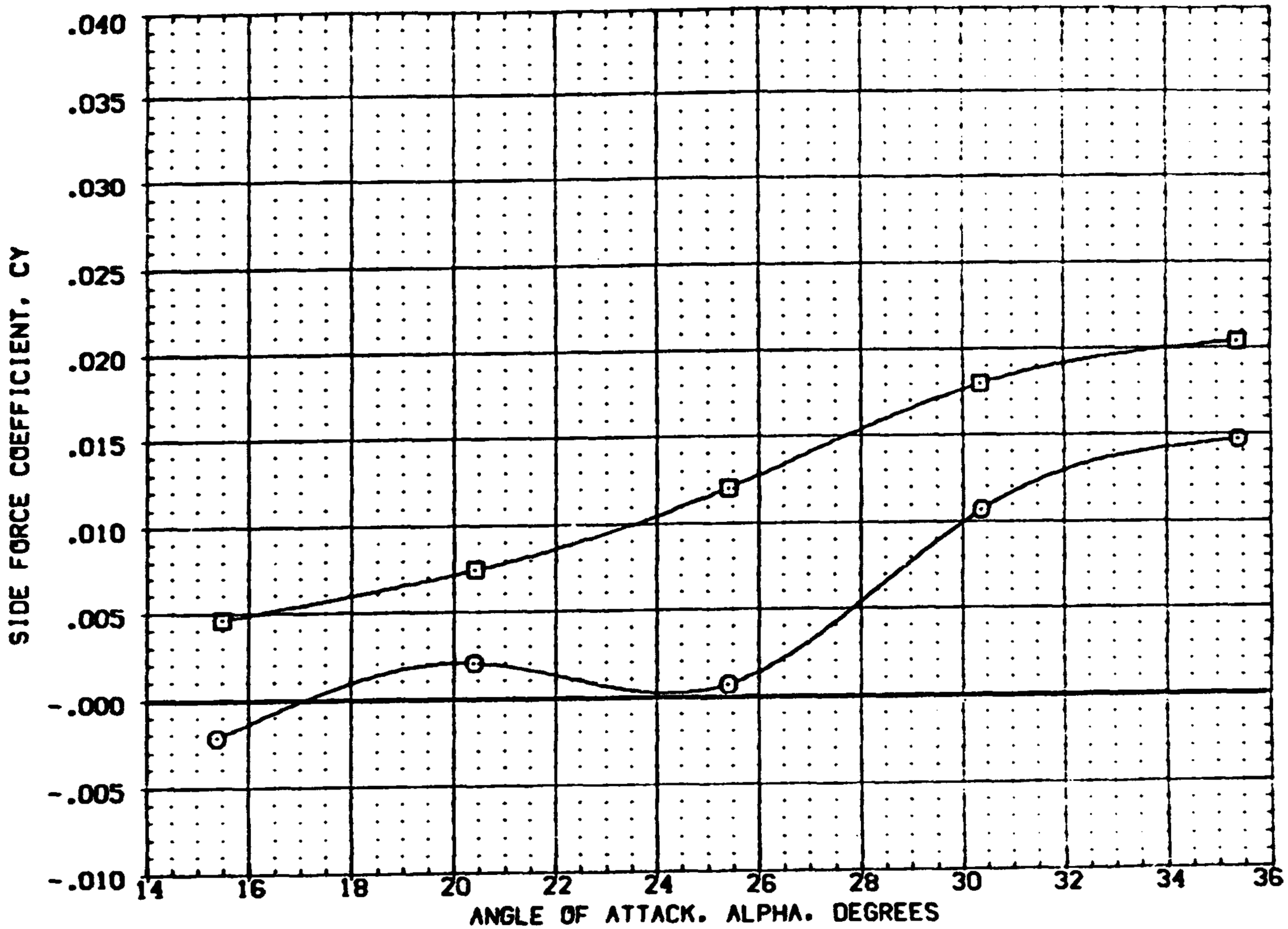


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

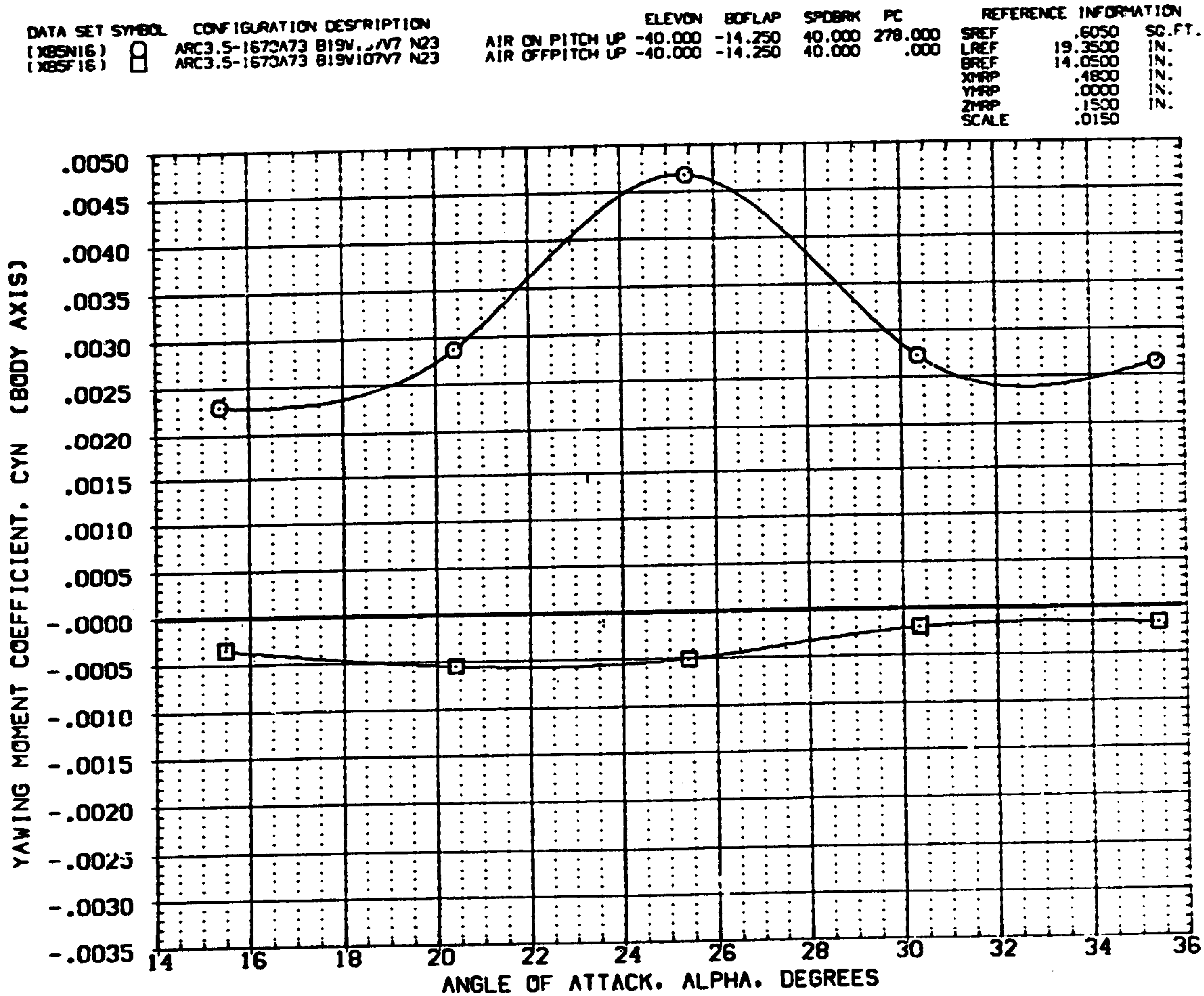


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

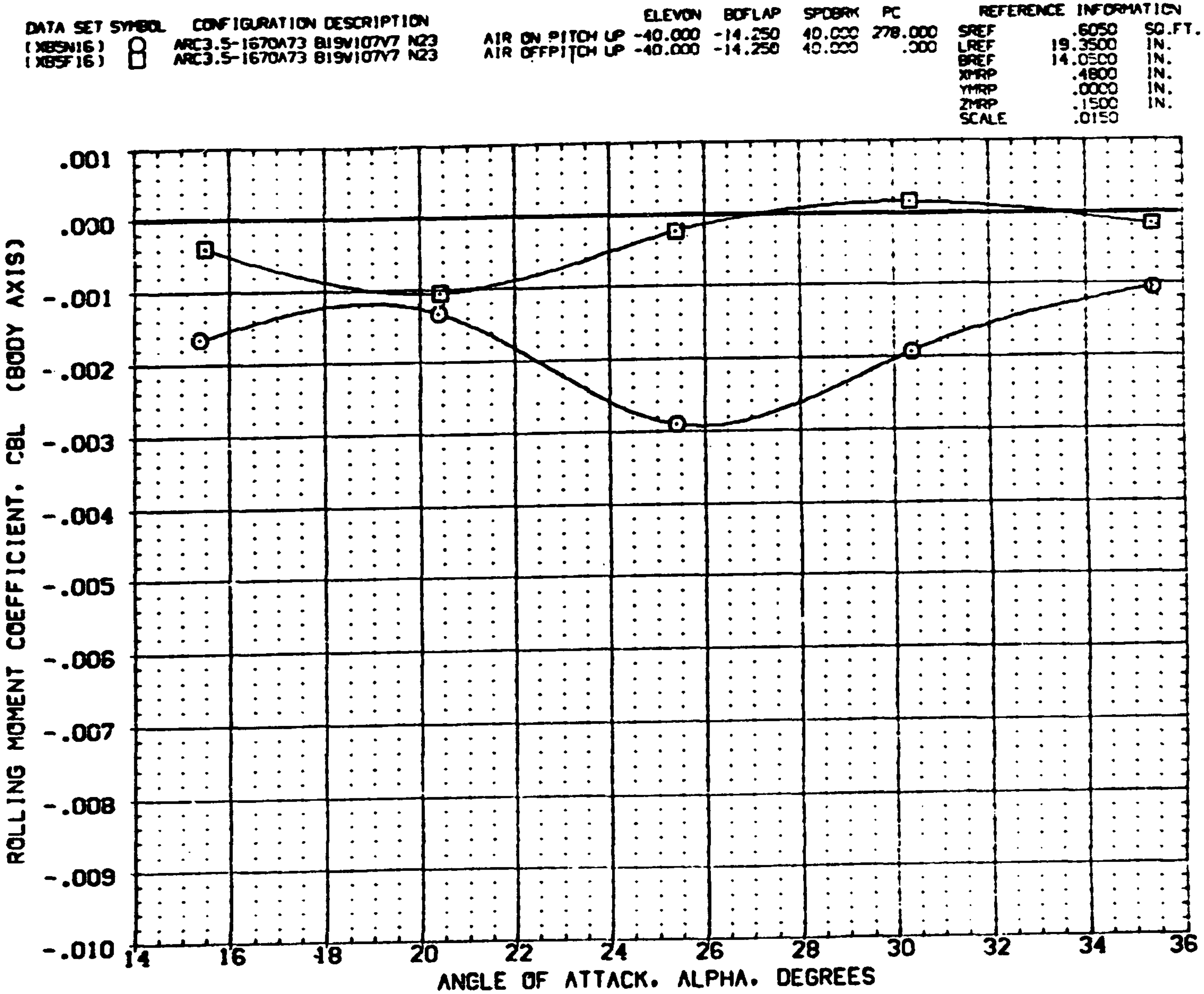


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N17)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	-20.000	-14.250	40.000	278.000
(XB5F17)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

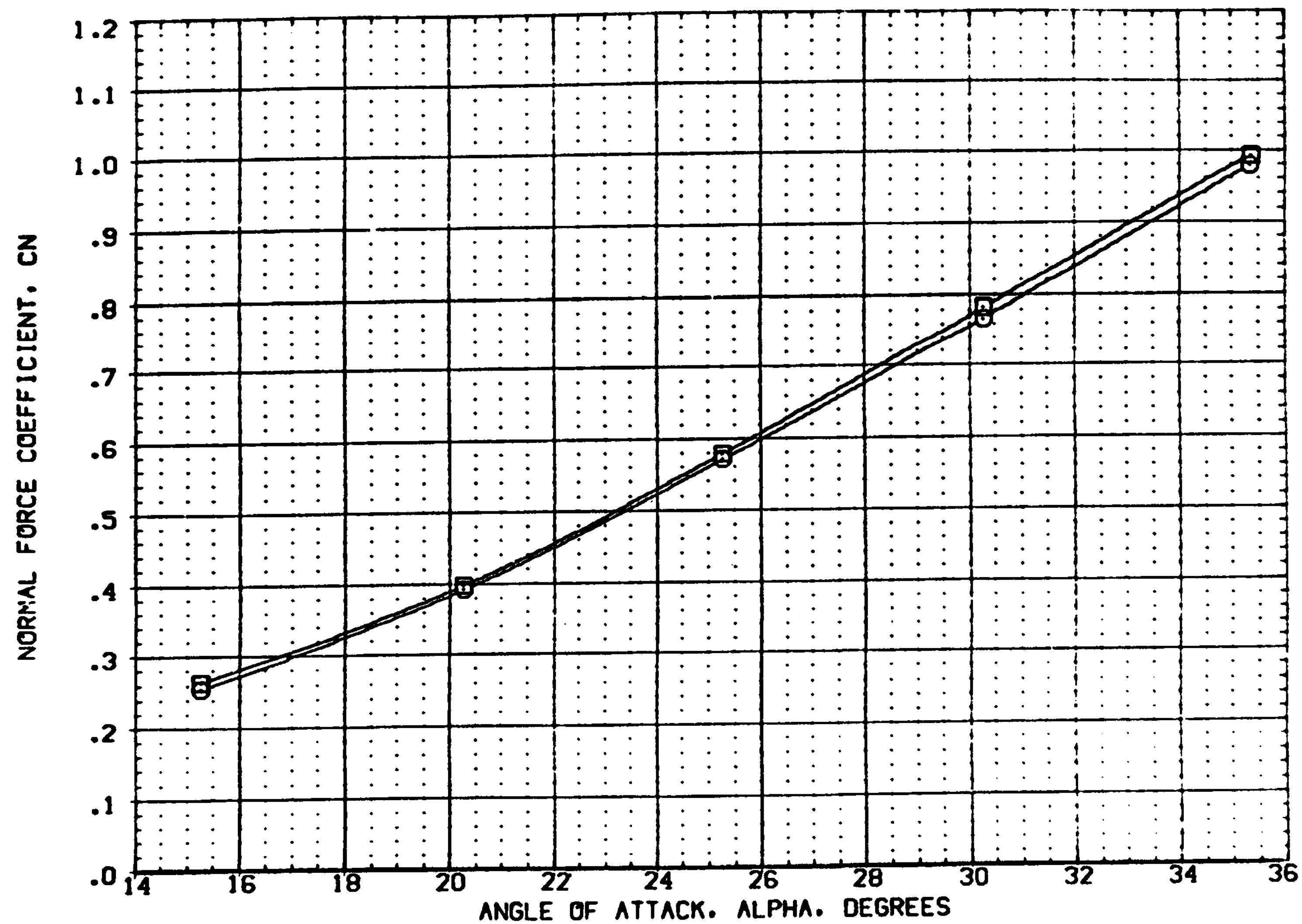


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.
(A)MACH = 10.29

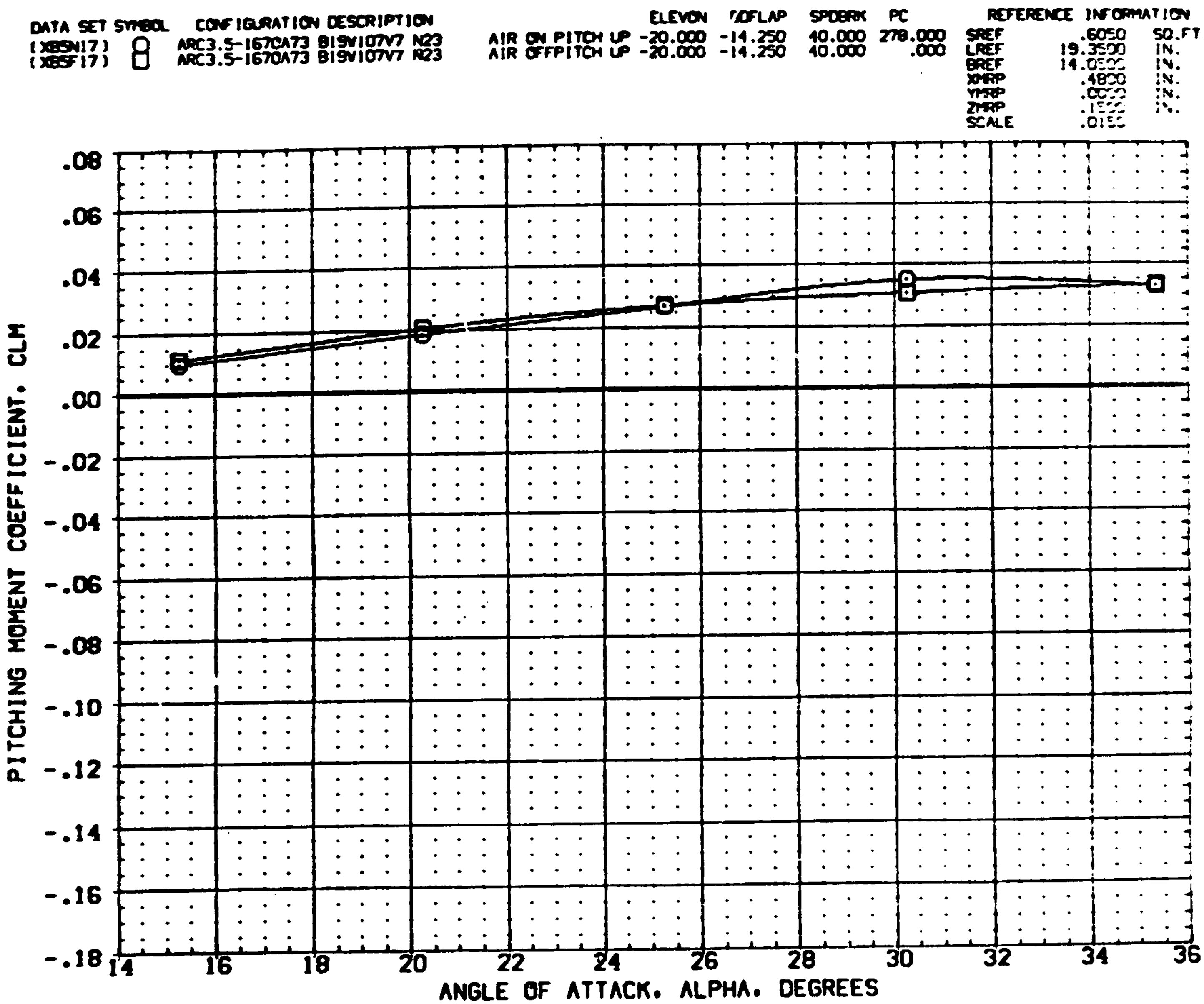


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XBSN17)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	-20.000	-14.250	40.000	278.000
(XBSF17)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

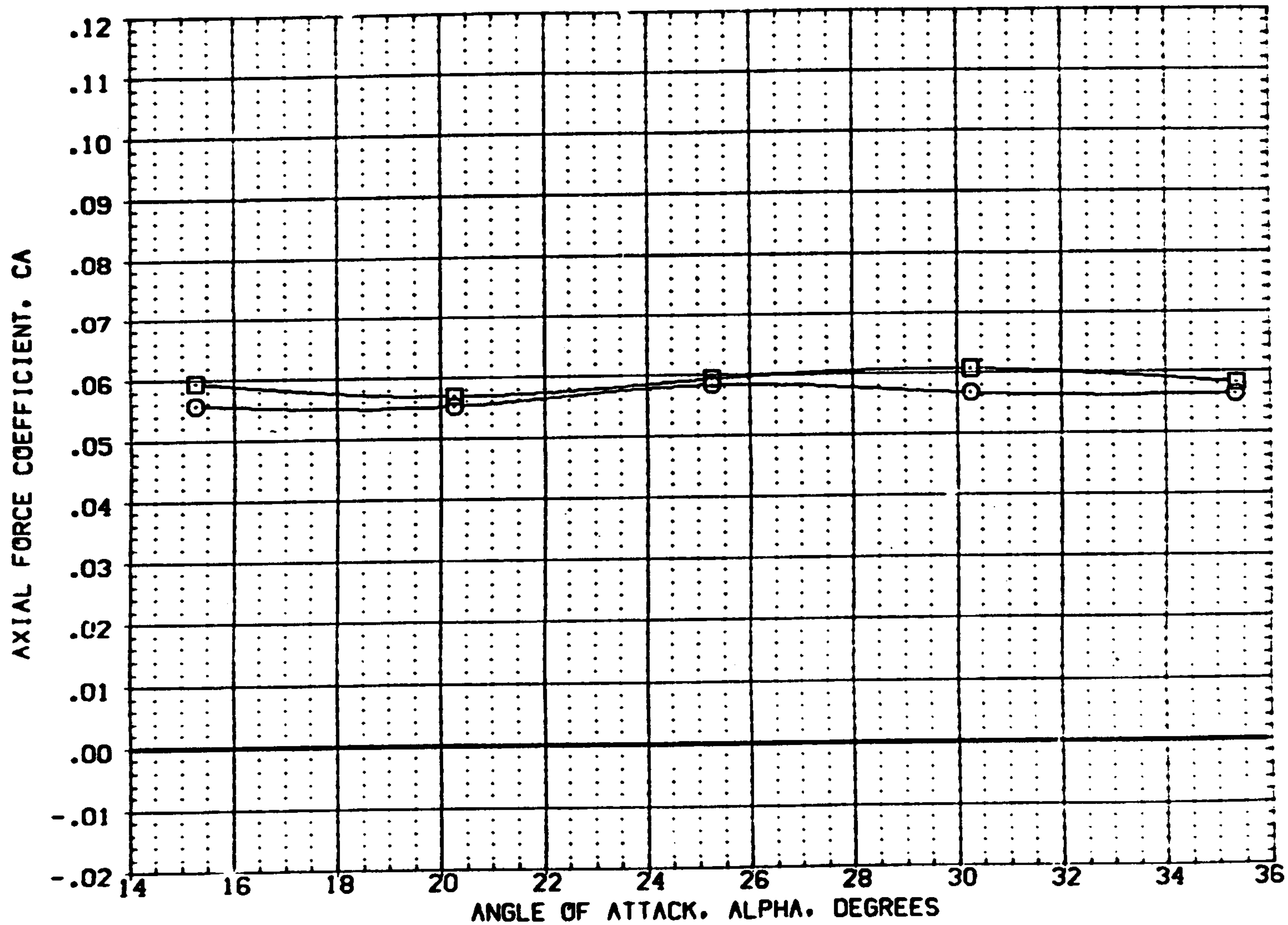


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N17)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	-20.000	-14.250	40.000	278.000
(XB5F17)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.[illegible]	IN.
XMRP	.49[illegible]	IN.
YMRP	.[illegible]	IN.
ZMRP	.[illegible]	IN.
SCALE	.[illegible]	

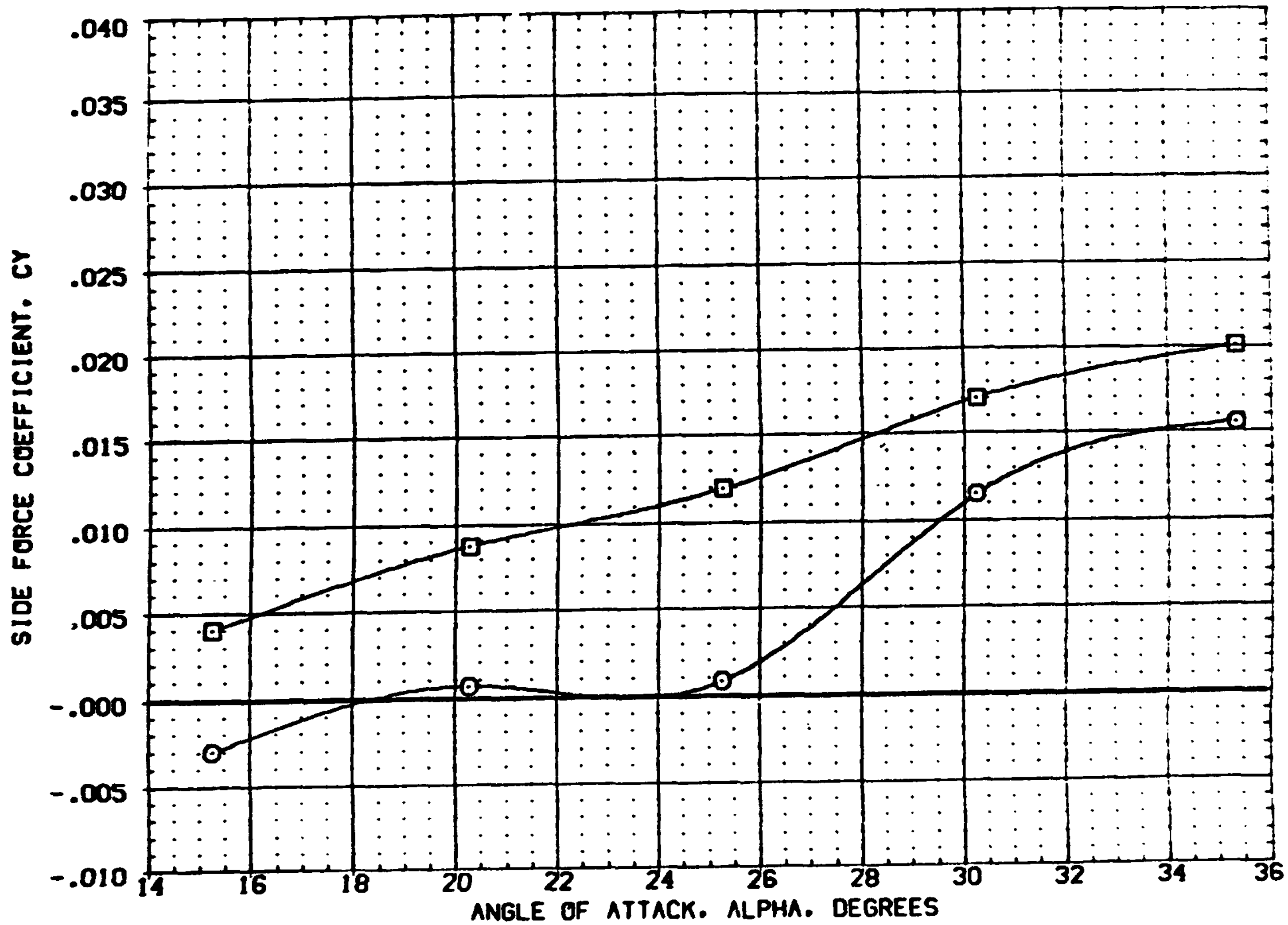


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N17)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	-20.000	-14.250	40.000	278.000
(XB5F17)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

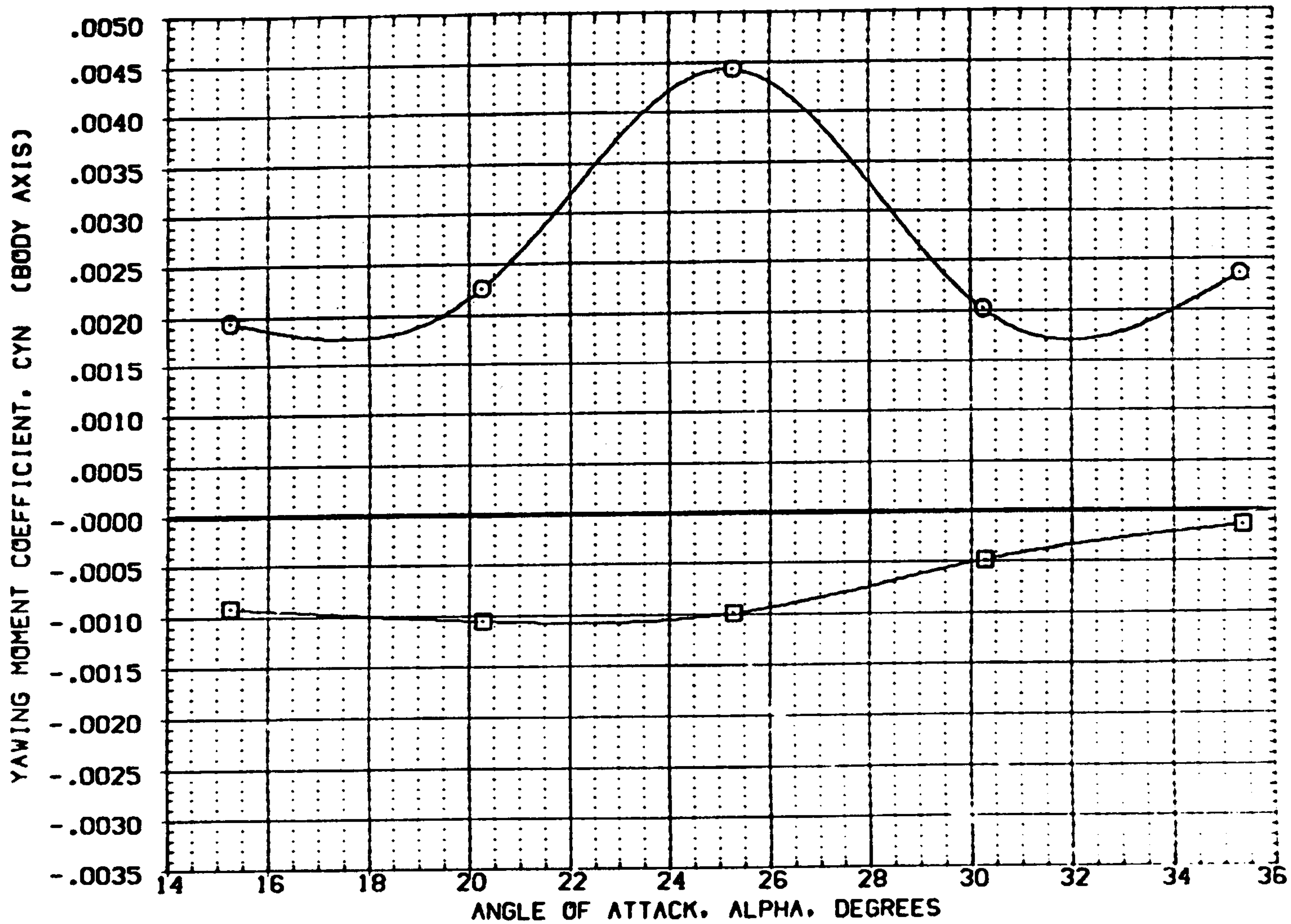


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

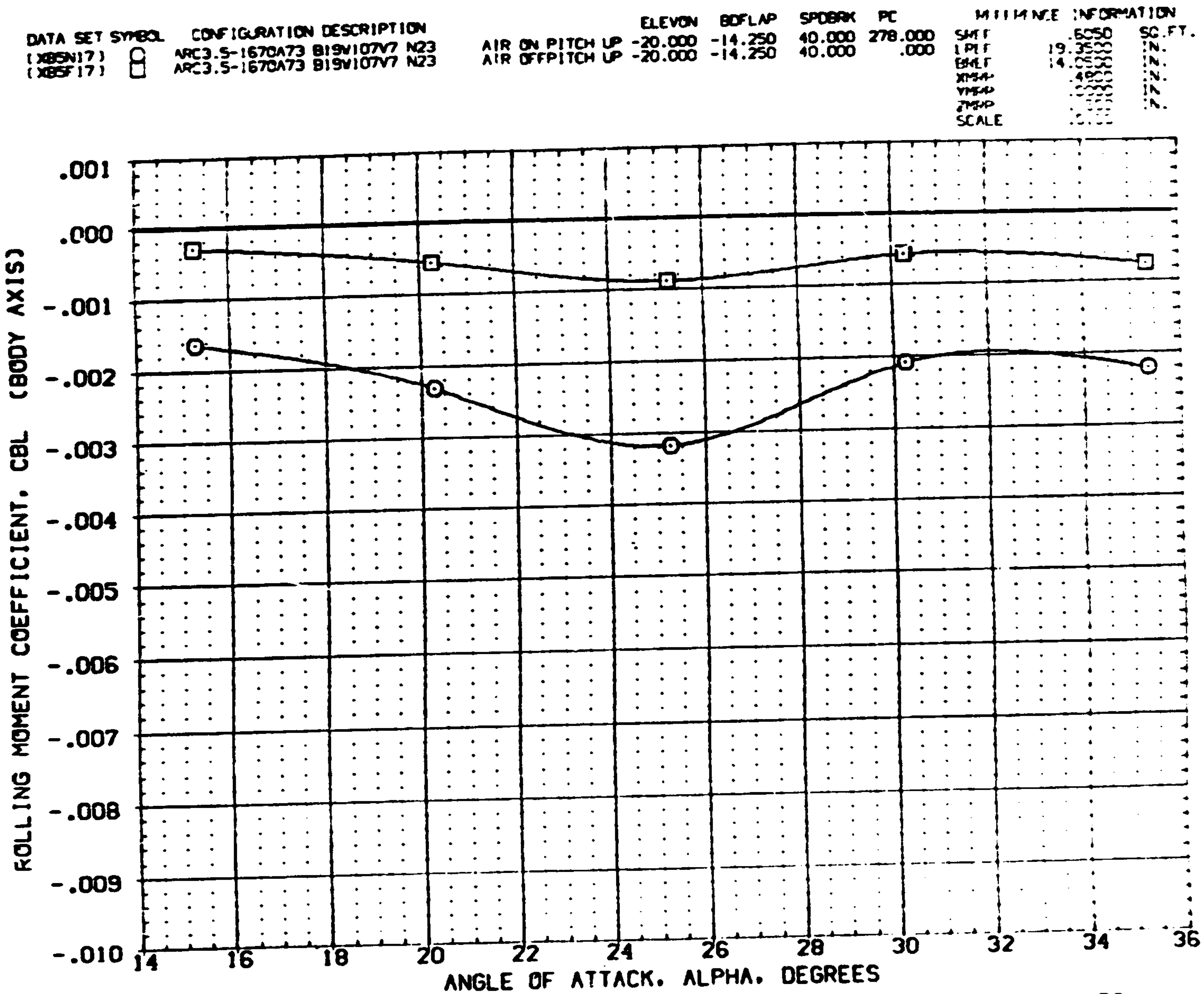


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N18)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	.000	.000	40.000	278.000
(X95F18)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

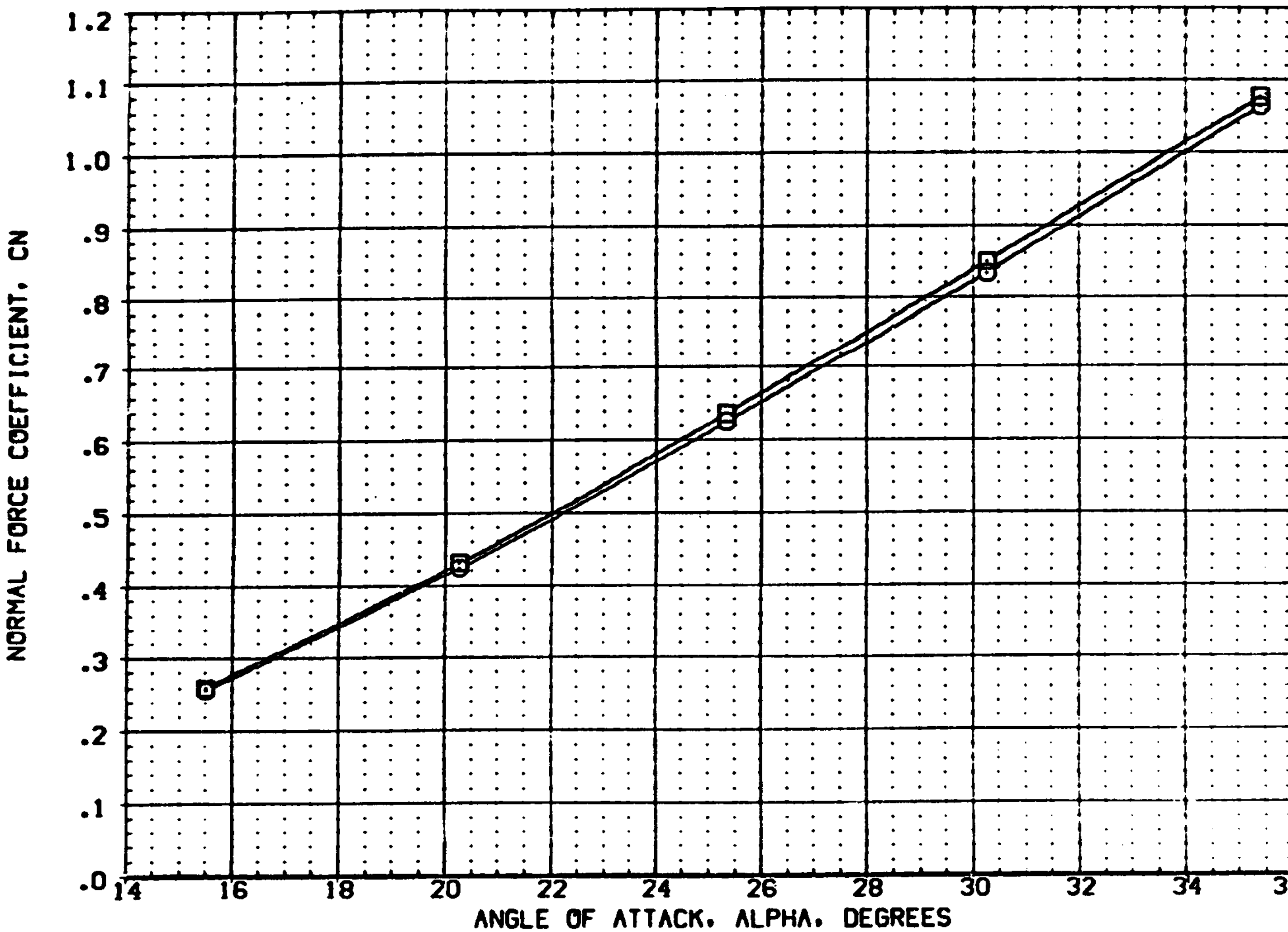


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N18)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	.000	.000	40.000	278.000
(XB5F18)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

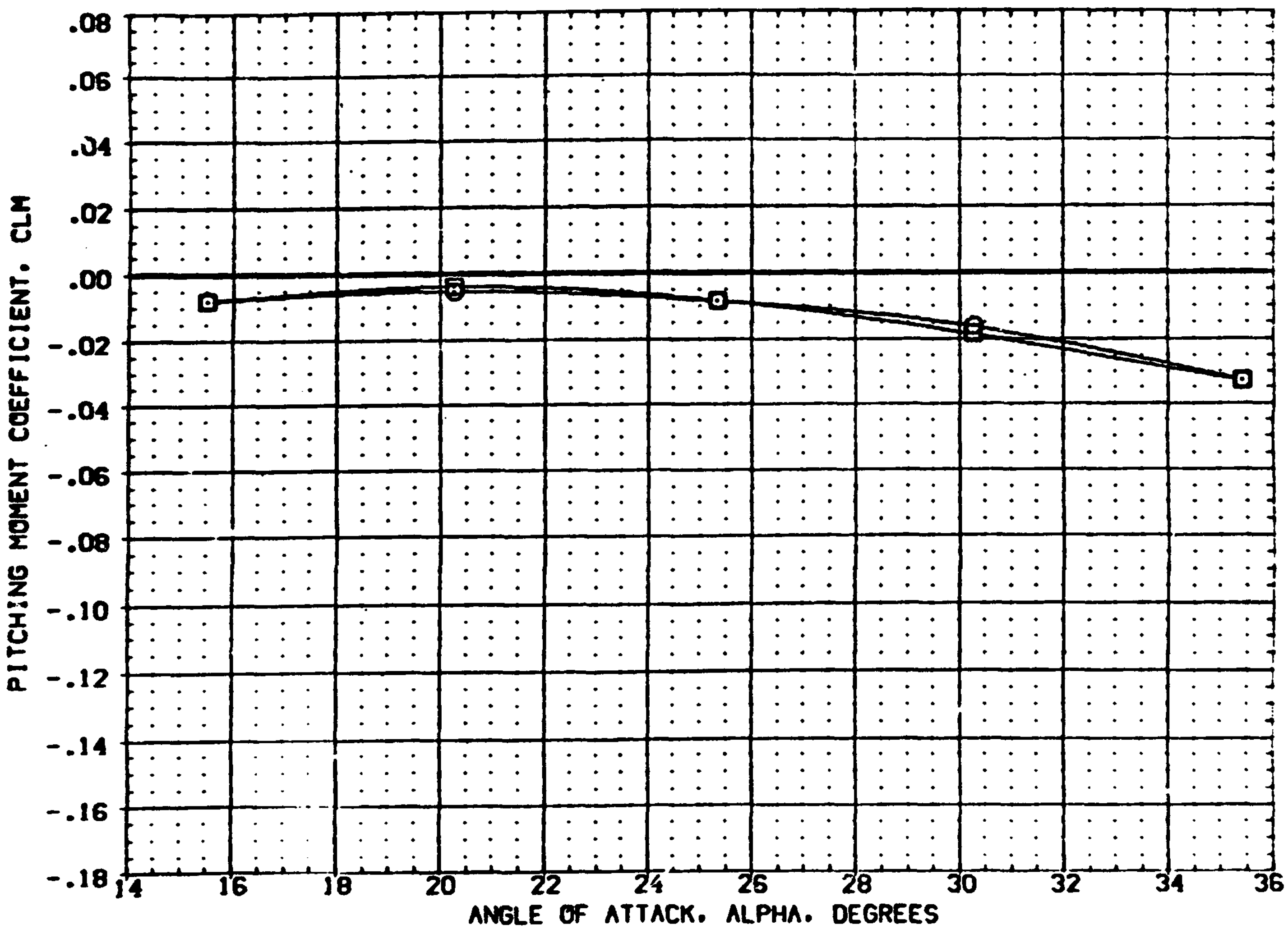


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N18)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	.000	.000	40.000	278.000
(XB5F18)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

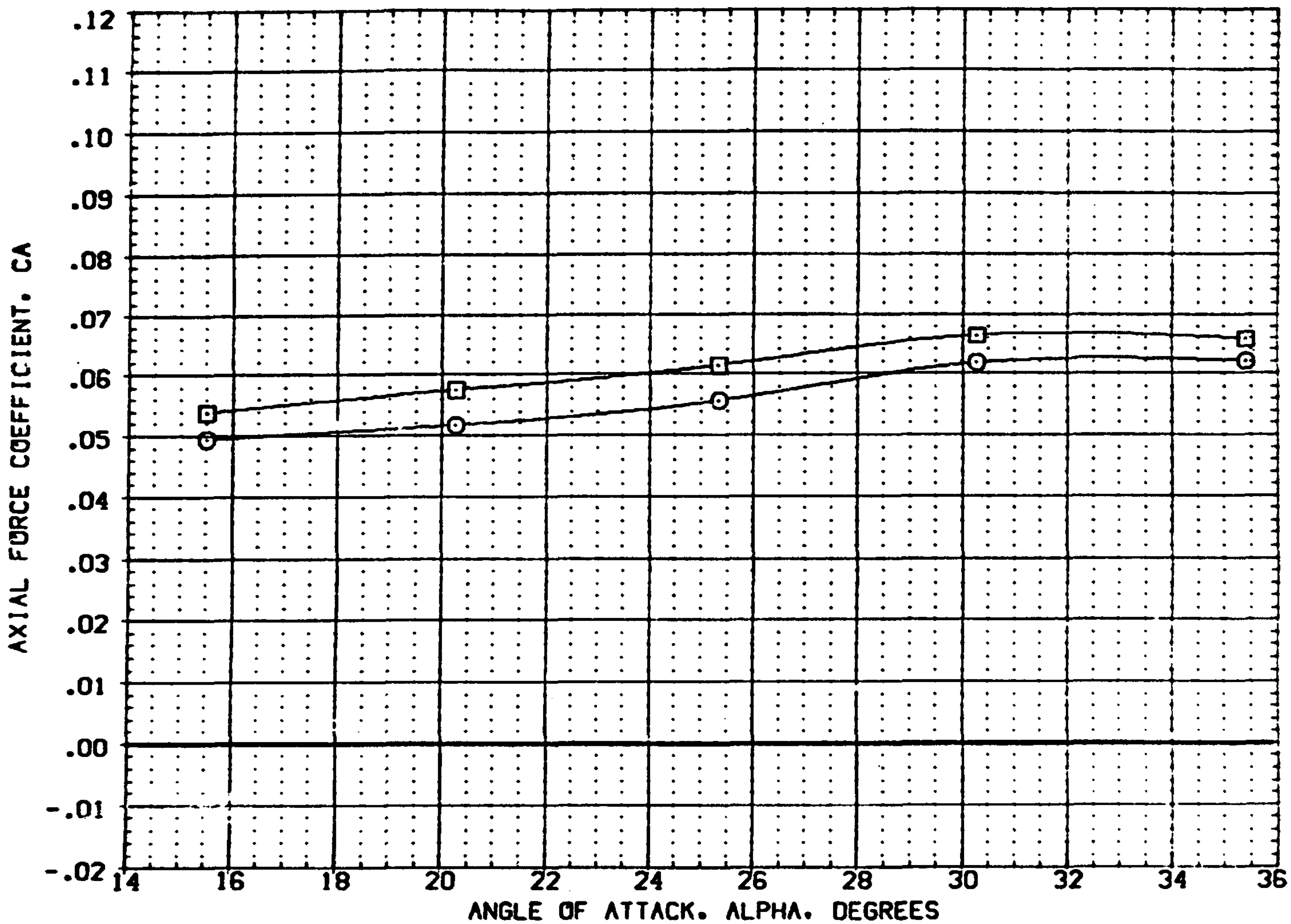


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N19)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	.000	.000	40.000	278.000
(XB5F18)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

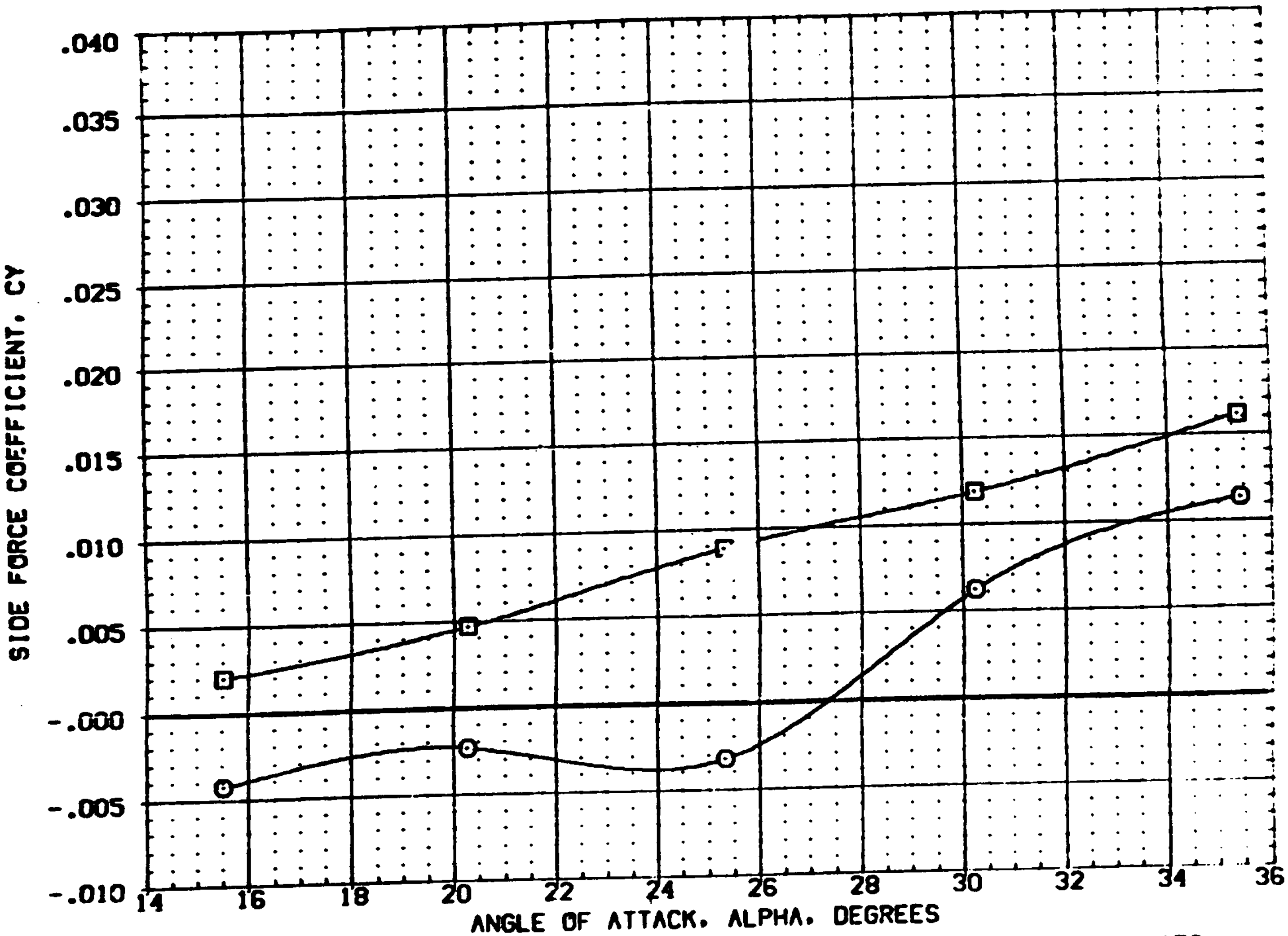


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N18)	○	ARC3.5-1670A73 B19V107V7 N23	AIR ON PITCH UP	.000	.000	40.000	278.000
(XB5F18)	□	ARC3.5-1670A73 B19V107V7 N23	AIR OFFPITCH UP	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

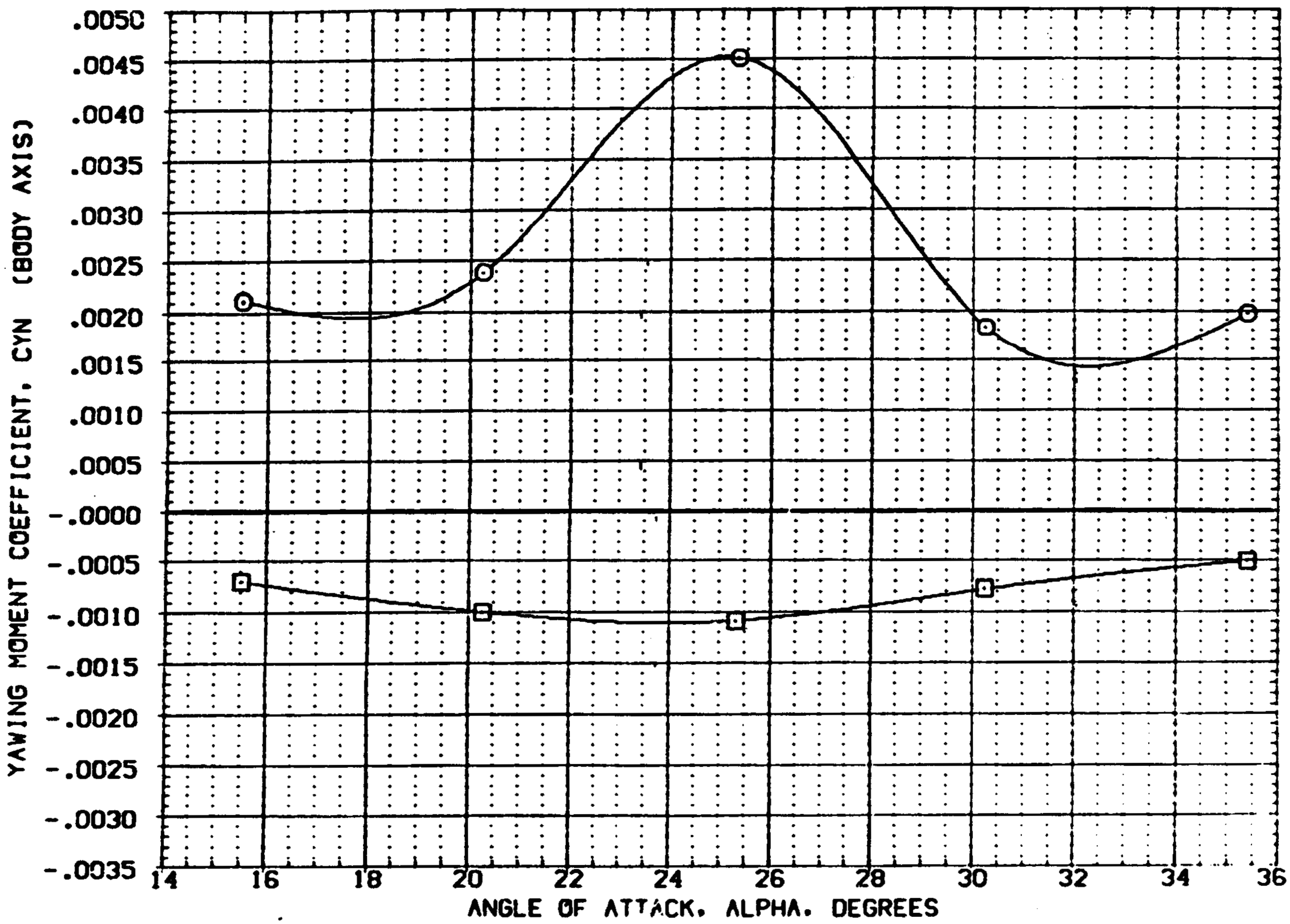


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

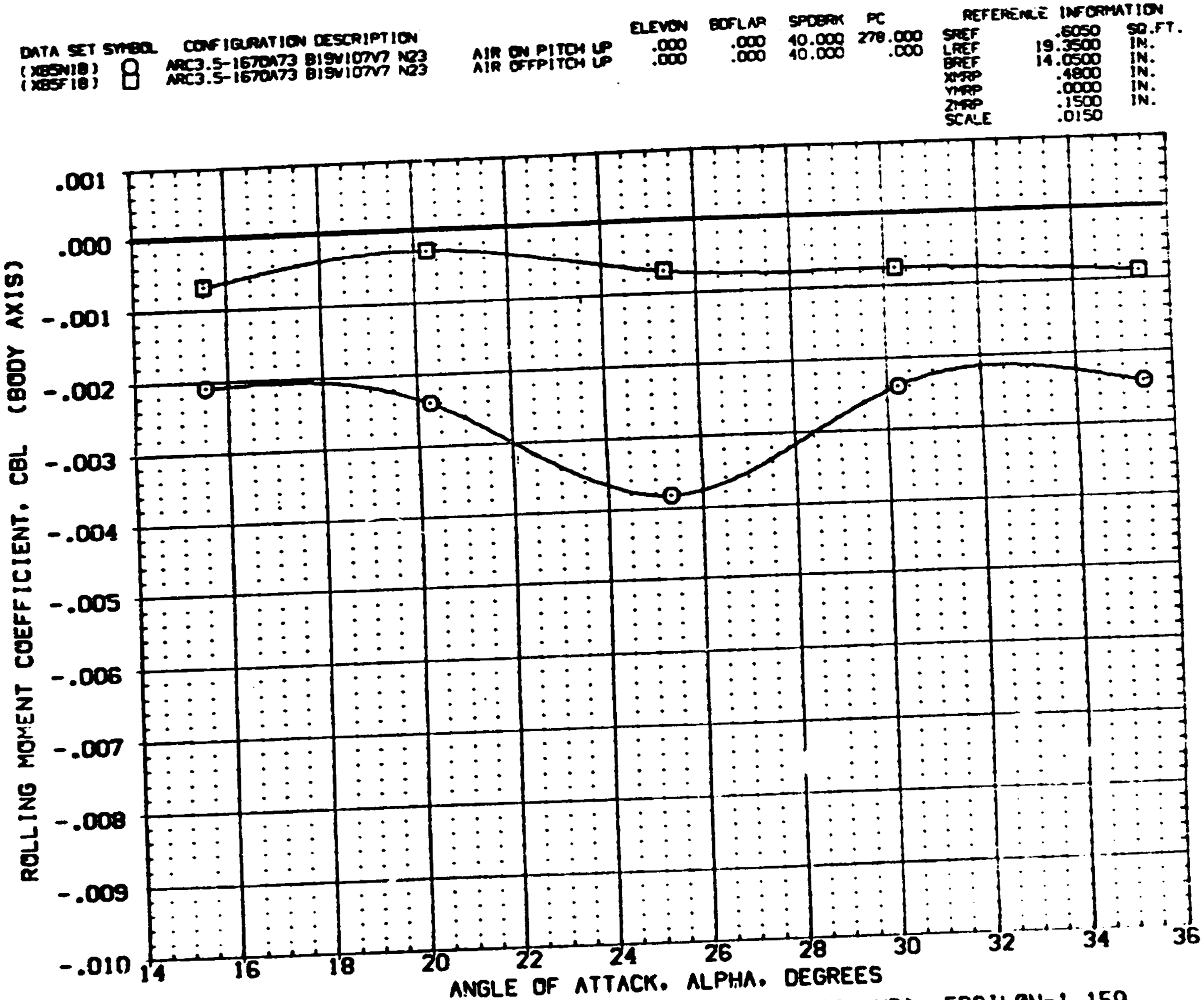


FIG. 6 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH UP), EPSILON=1.159.

(A)MACH = 10.29

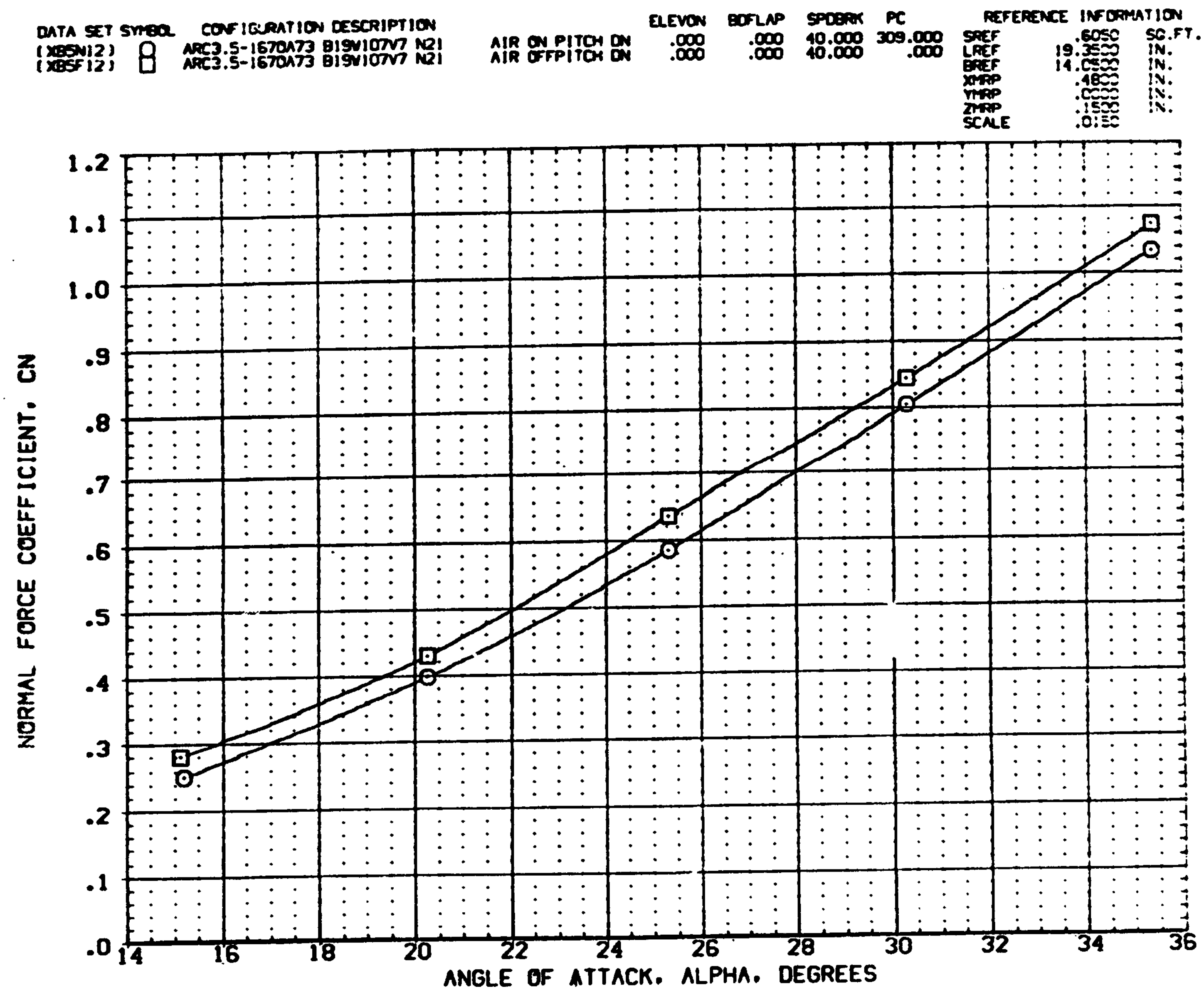


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.23

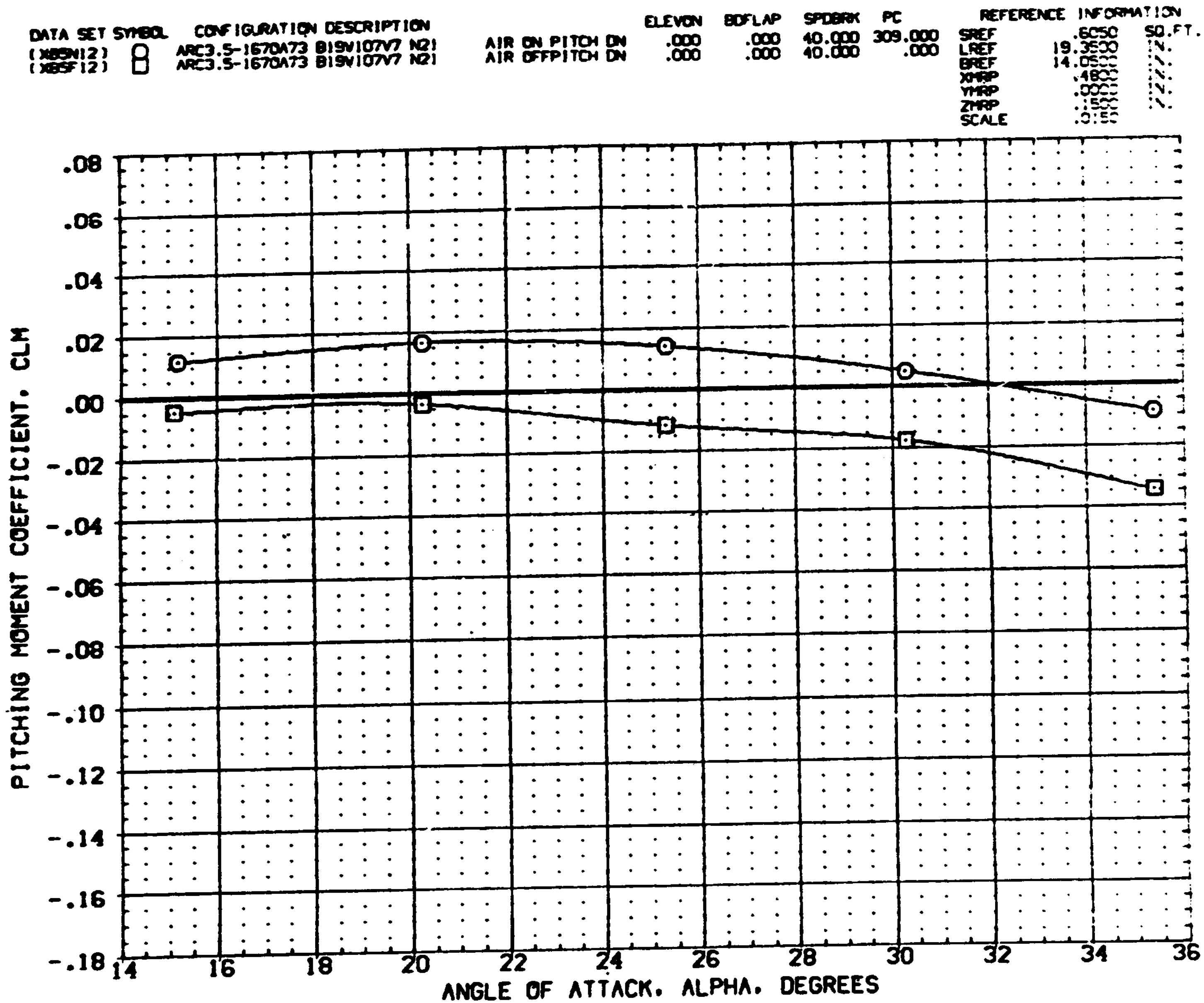


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N12)	○	ARC3.5-1670A73 B19V107V7 N21	AIR ON PITCH DN	.000	.000	40.000	309.000
(XB5F12)	□	ARC3.5-1670A73 B19V107V7 N21	AIR OFFPITCH DN	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

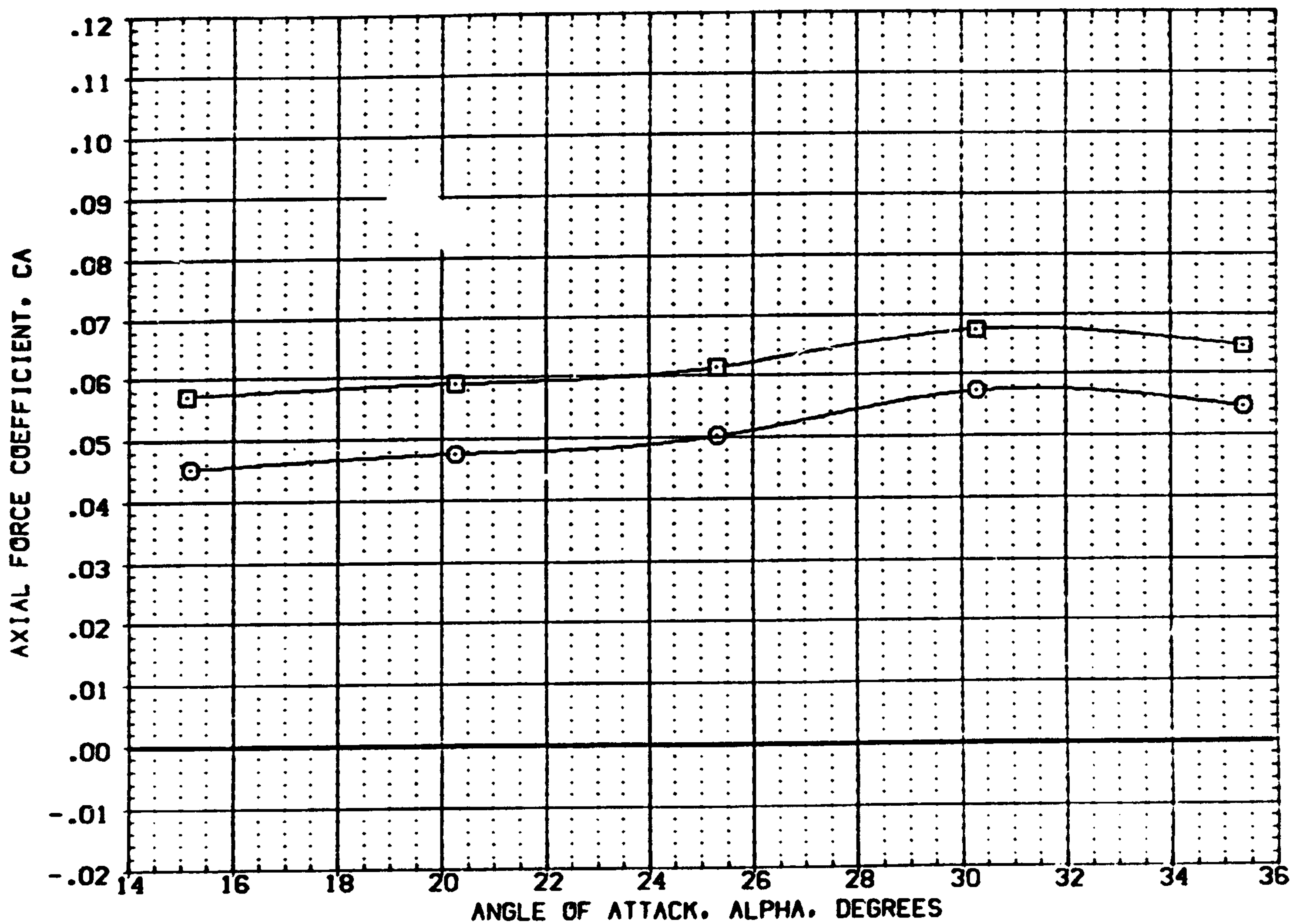


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

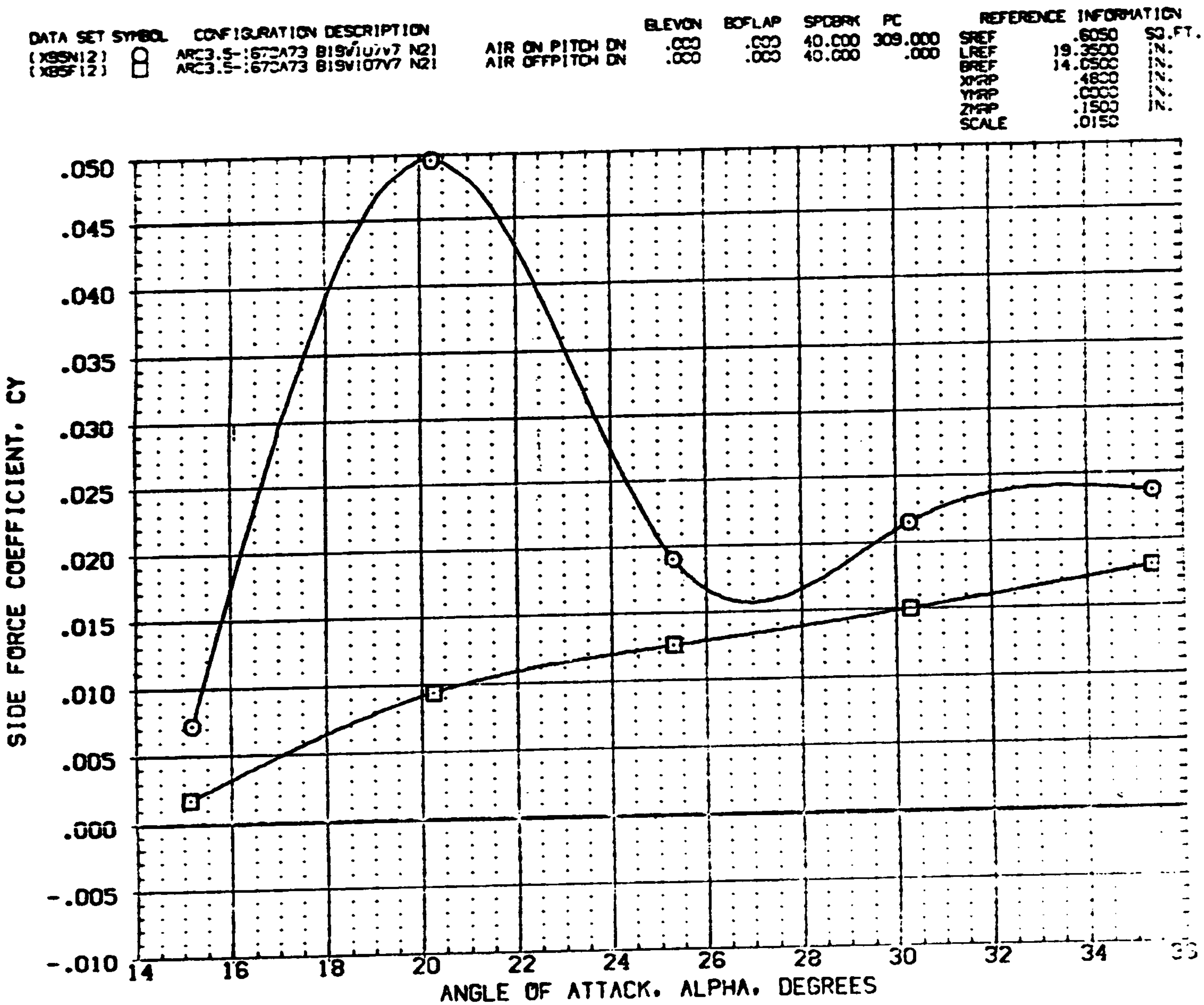


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.153.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XBSN12)	⊙	ARC3.5-1670A73 B19V107V7 N21	AIR ON PITCH DN	.000	.000	40.000	309.000
(XBSF12)	☐	ARC3.5-1670A73 B19V107V7 N21	AIR OFFPITCH DN	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

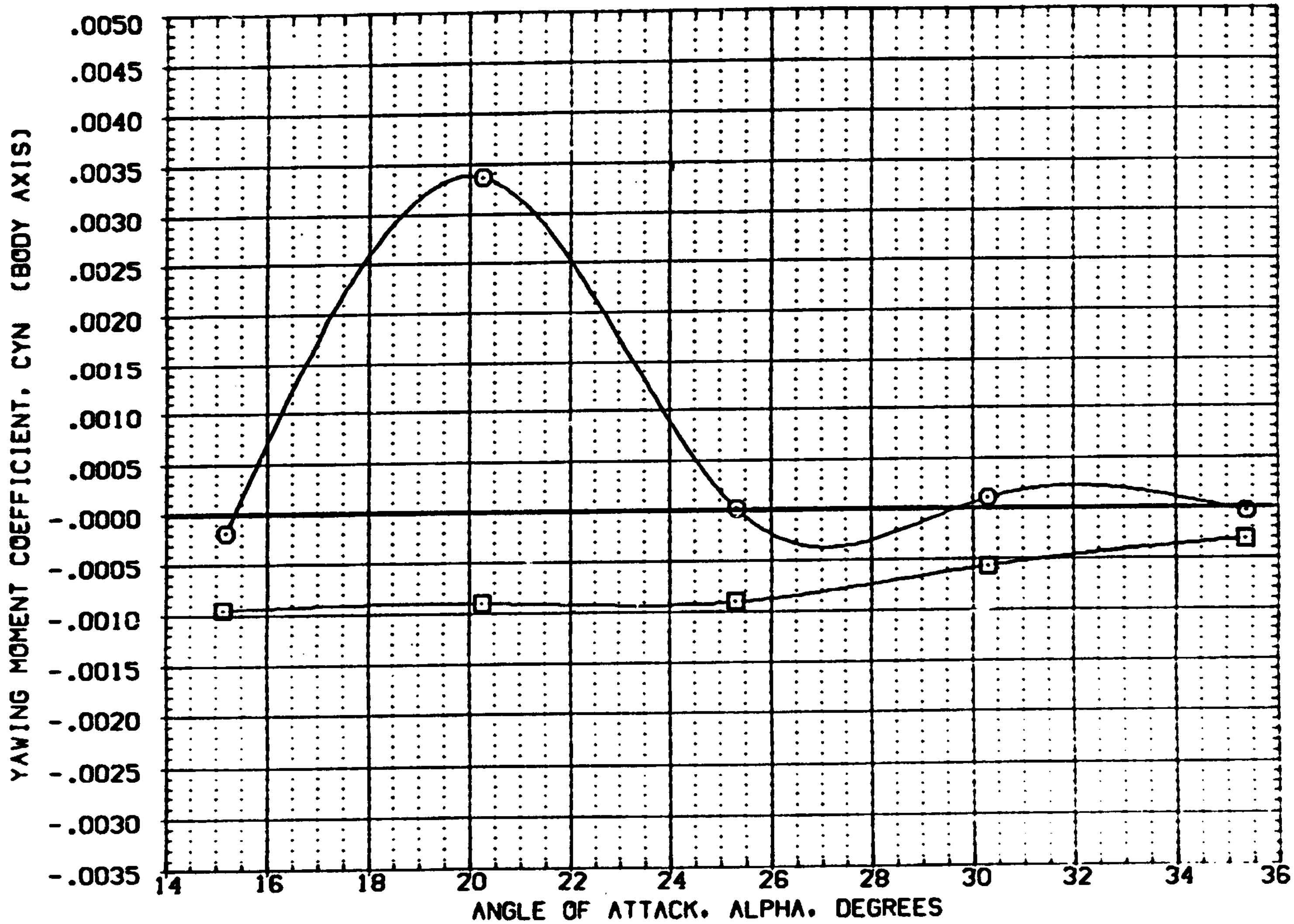


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

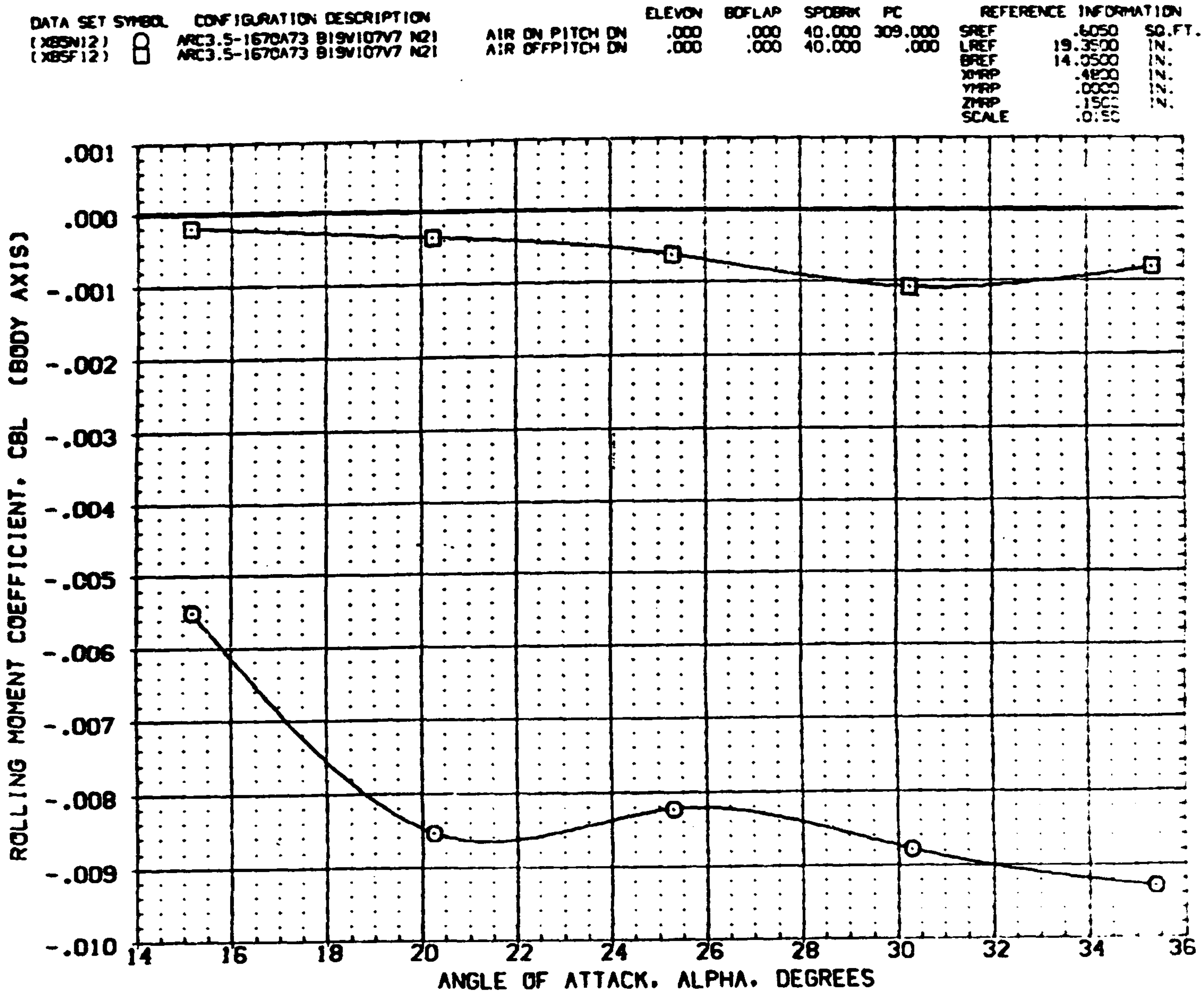


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N13)	○	ARC3.5-1670A73 B19V107V7 N21	AIR ON PITCH DN	15.000	13.750	40.000	309.000
(XB5F13)	□	ARC3.5-1670A73 B19V107V7 N21	AIR OFFPITCH DN	15.000	13.750	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

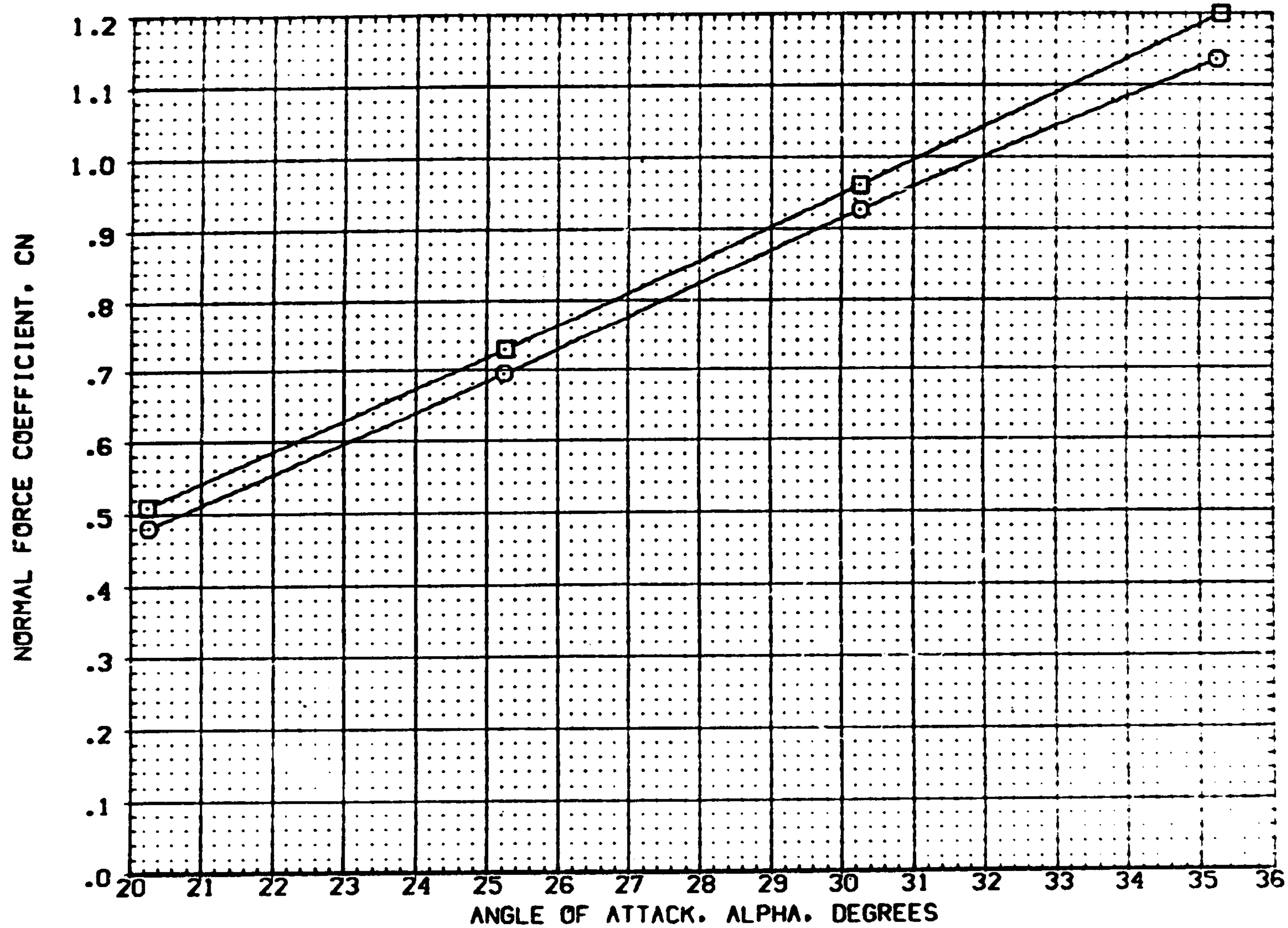


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

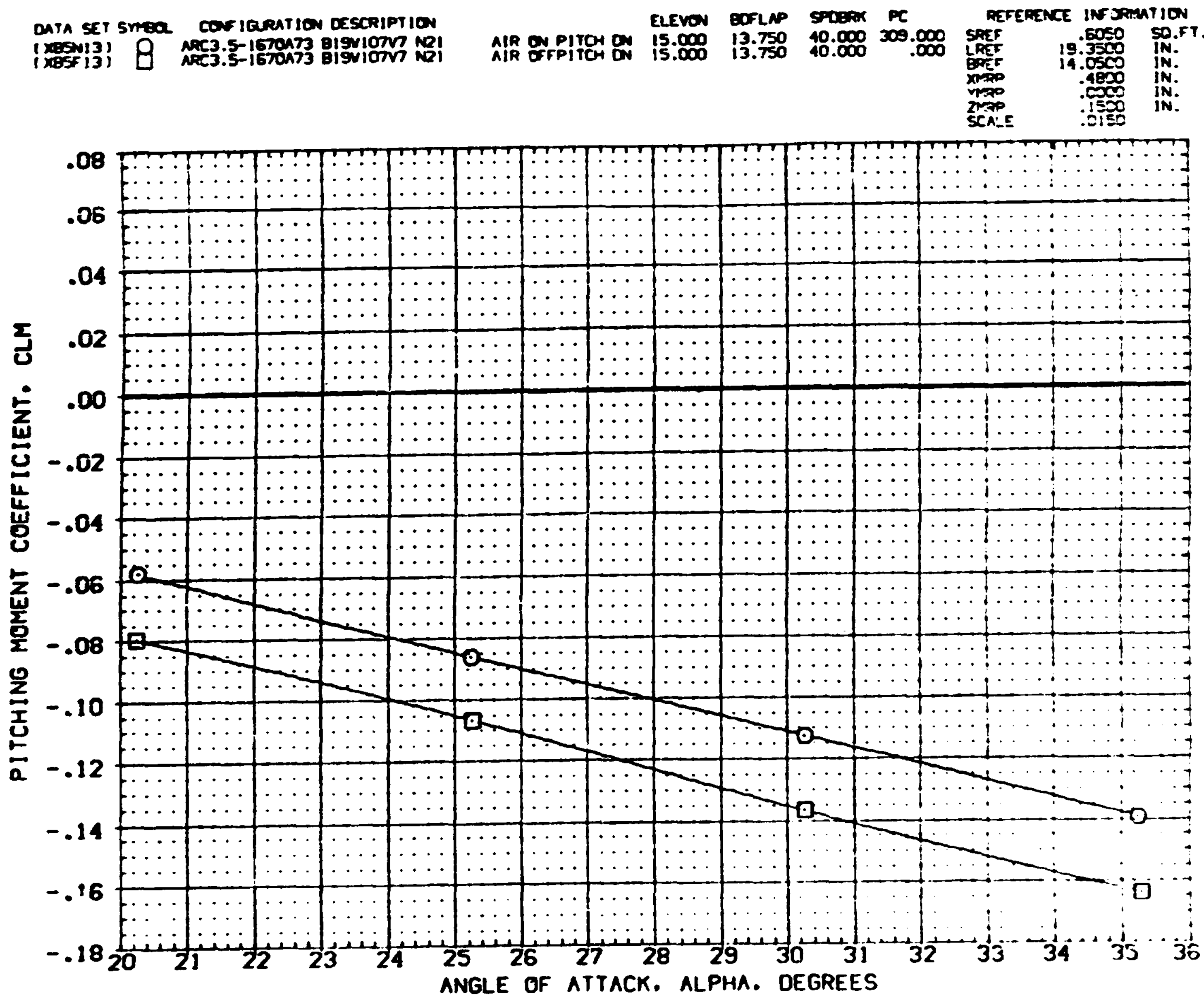


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

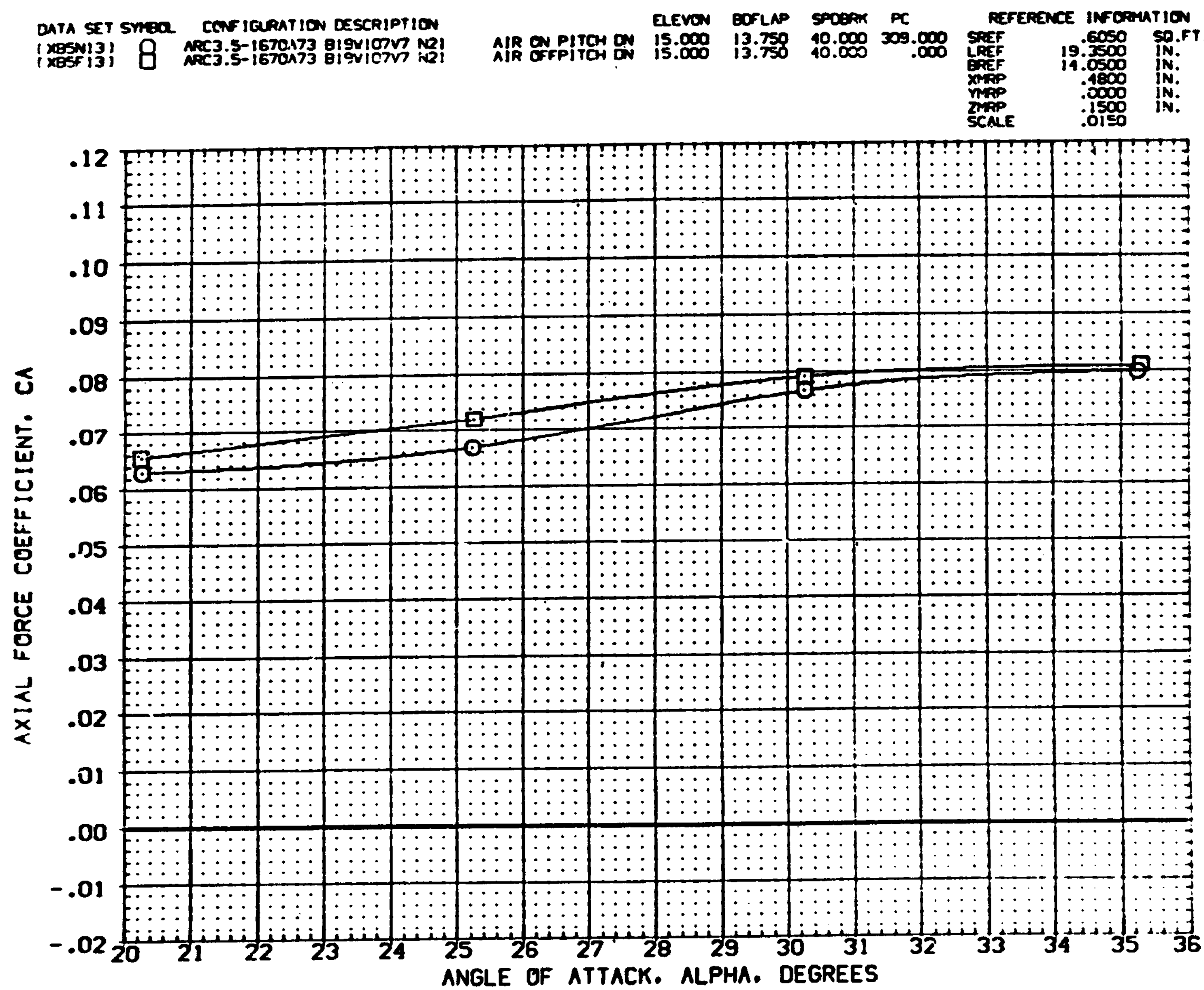


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

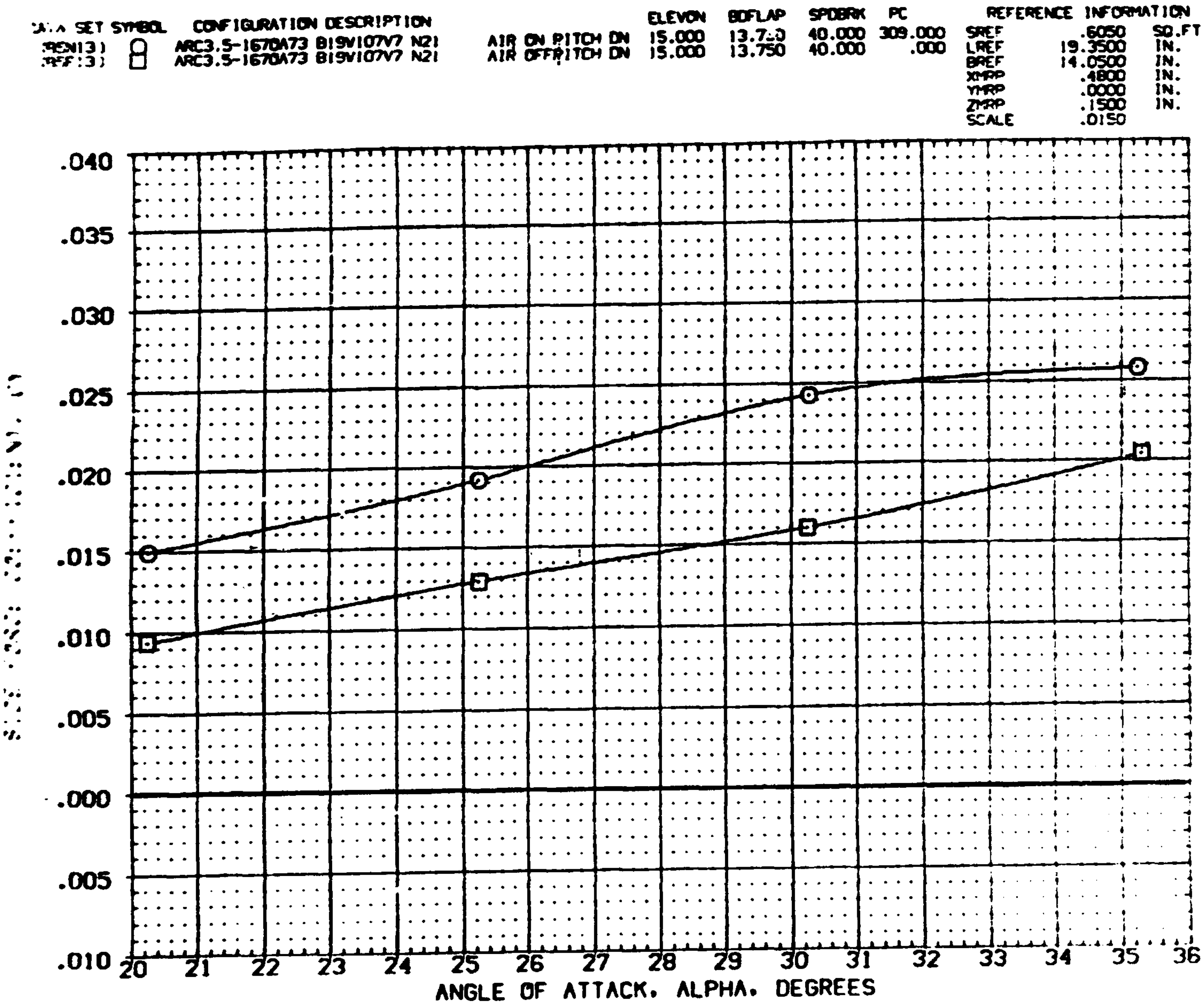


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

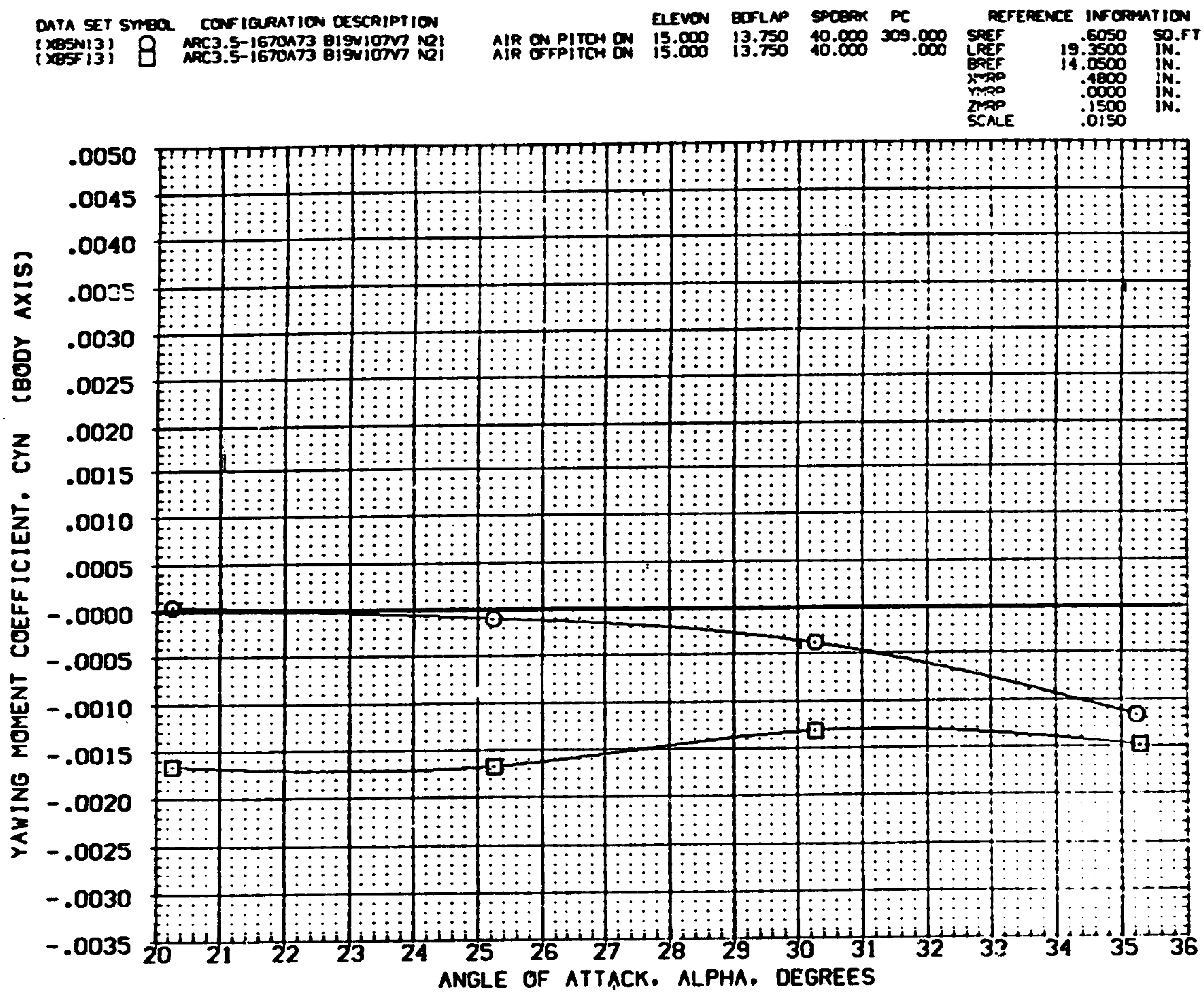


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

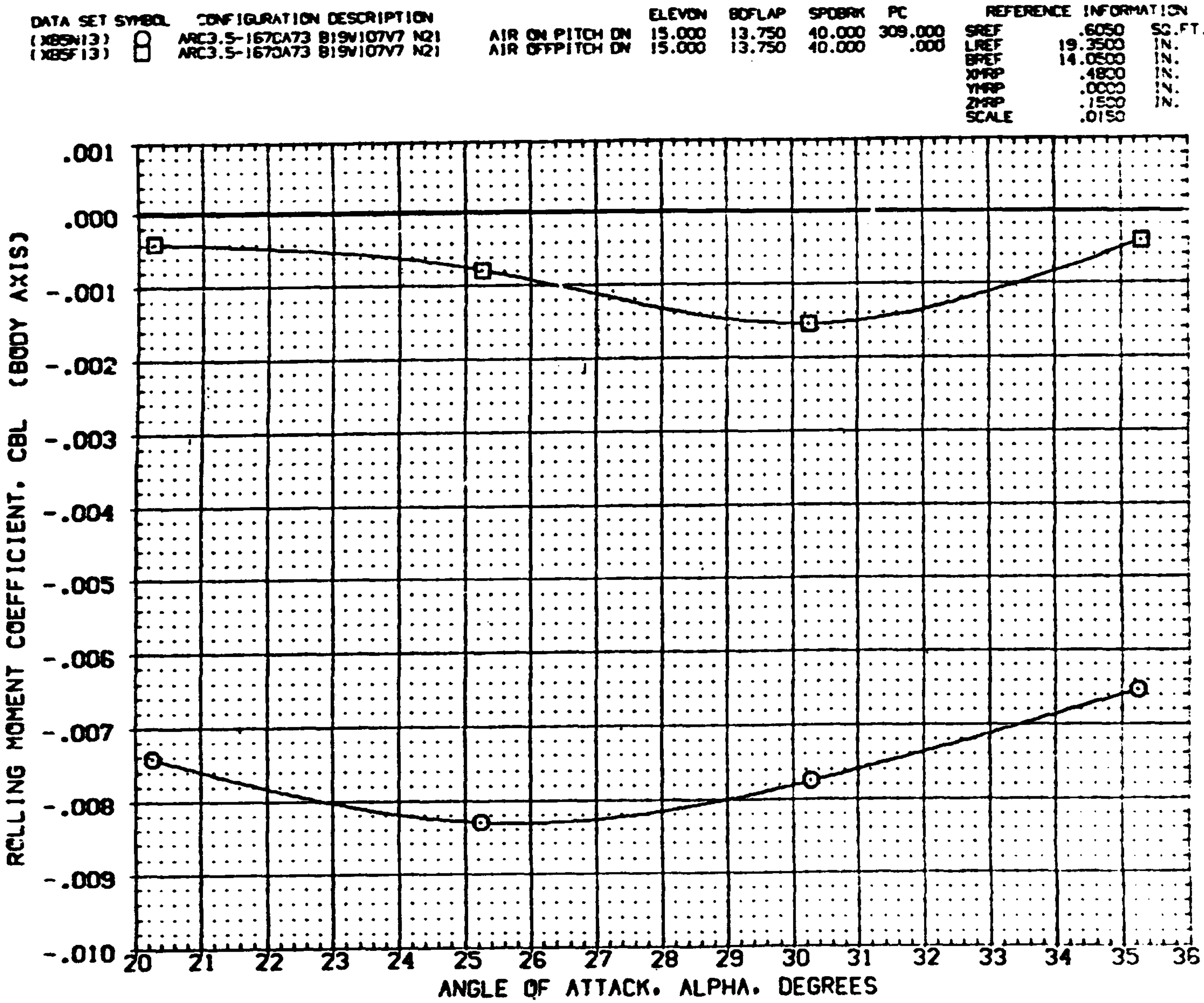


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N14)	○	ARC3.5-1670A73 B19V107V7 N21	AIR ON PITCH DN	-20.000	-14.250	40.000	309.000
(XB5F14)	□	ARC3.5-1670A73 B19V107V7 N21	AIR OFFPITCH DN	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

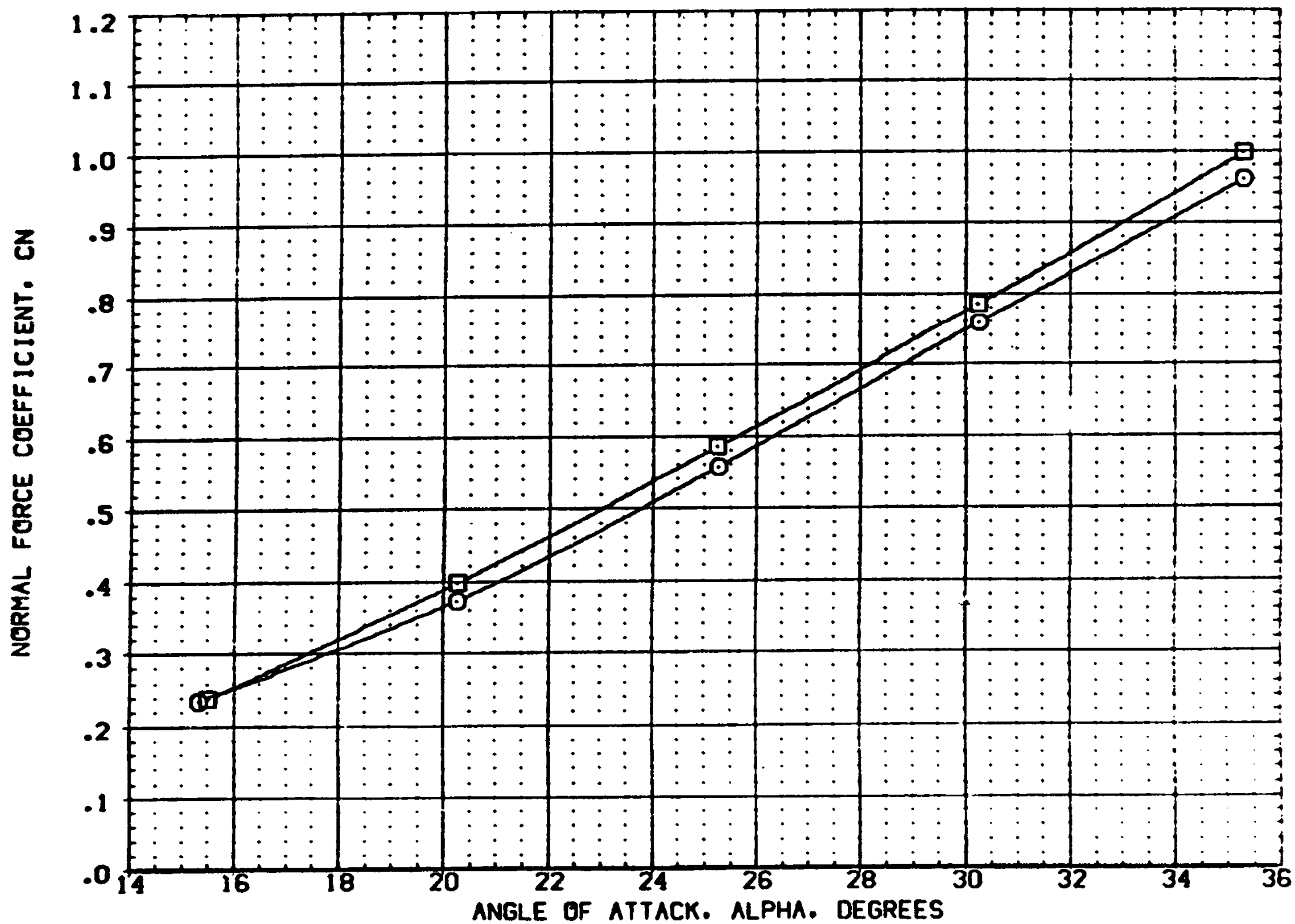


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

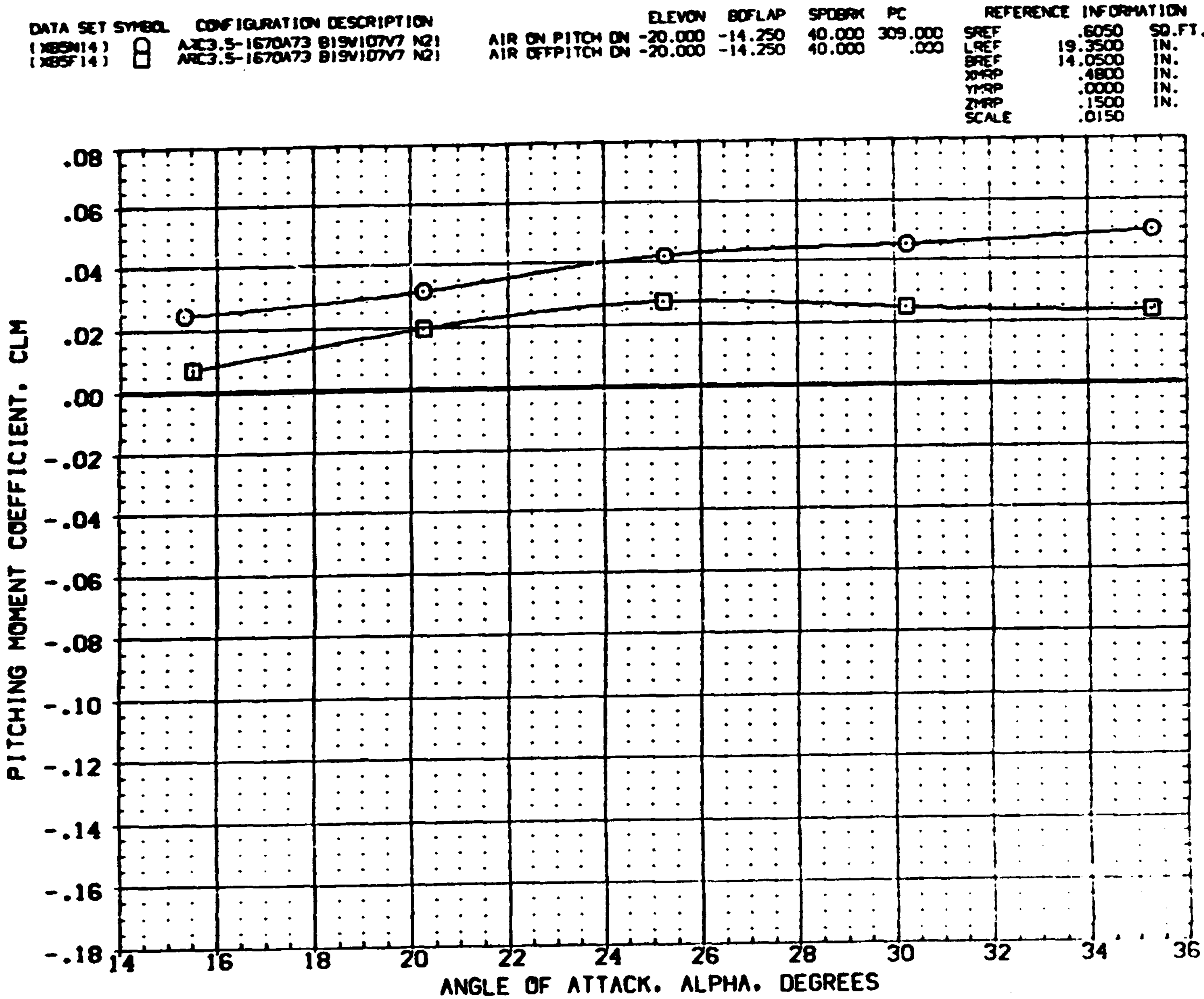


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

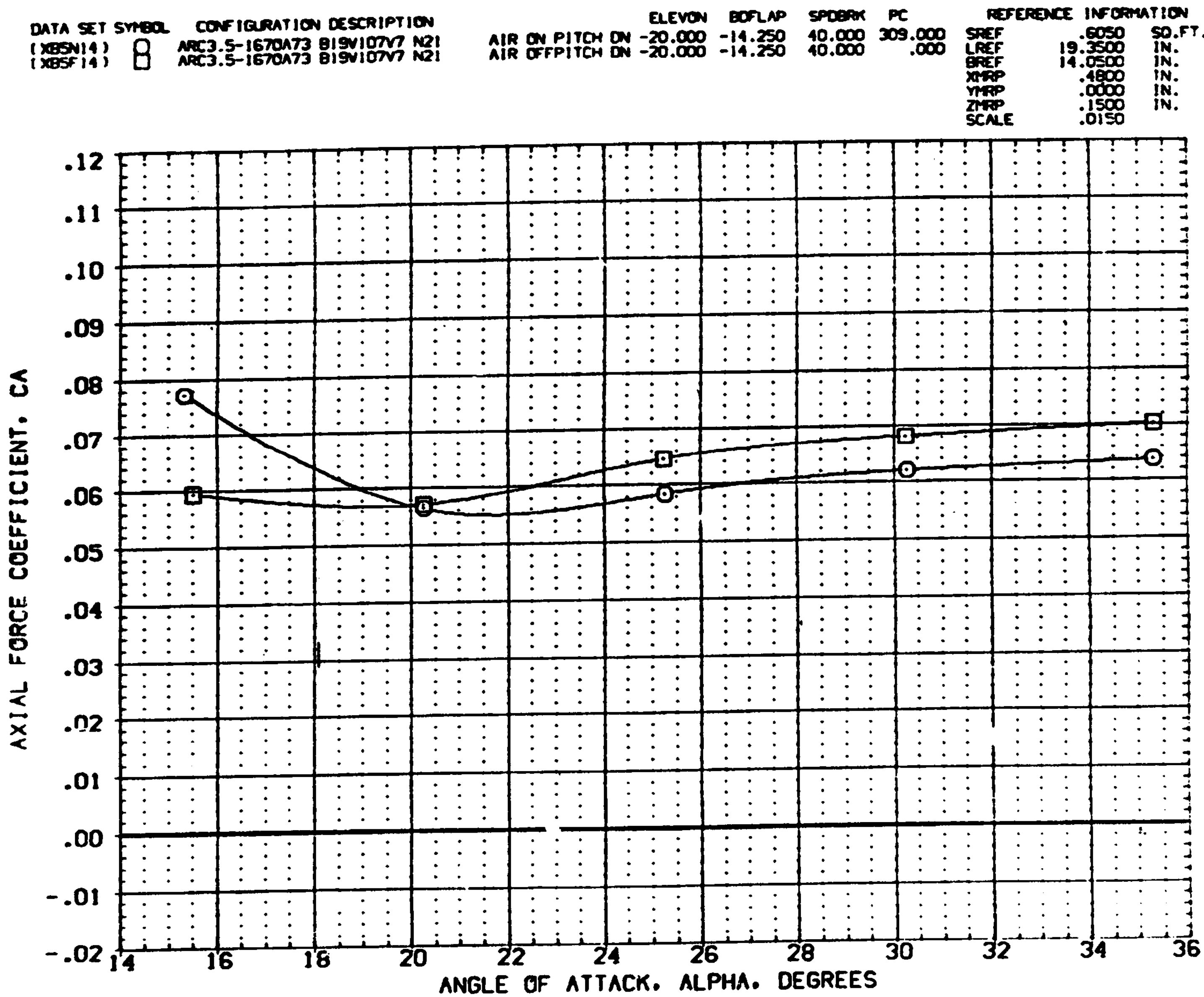


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

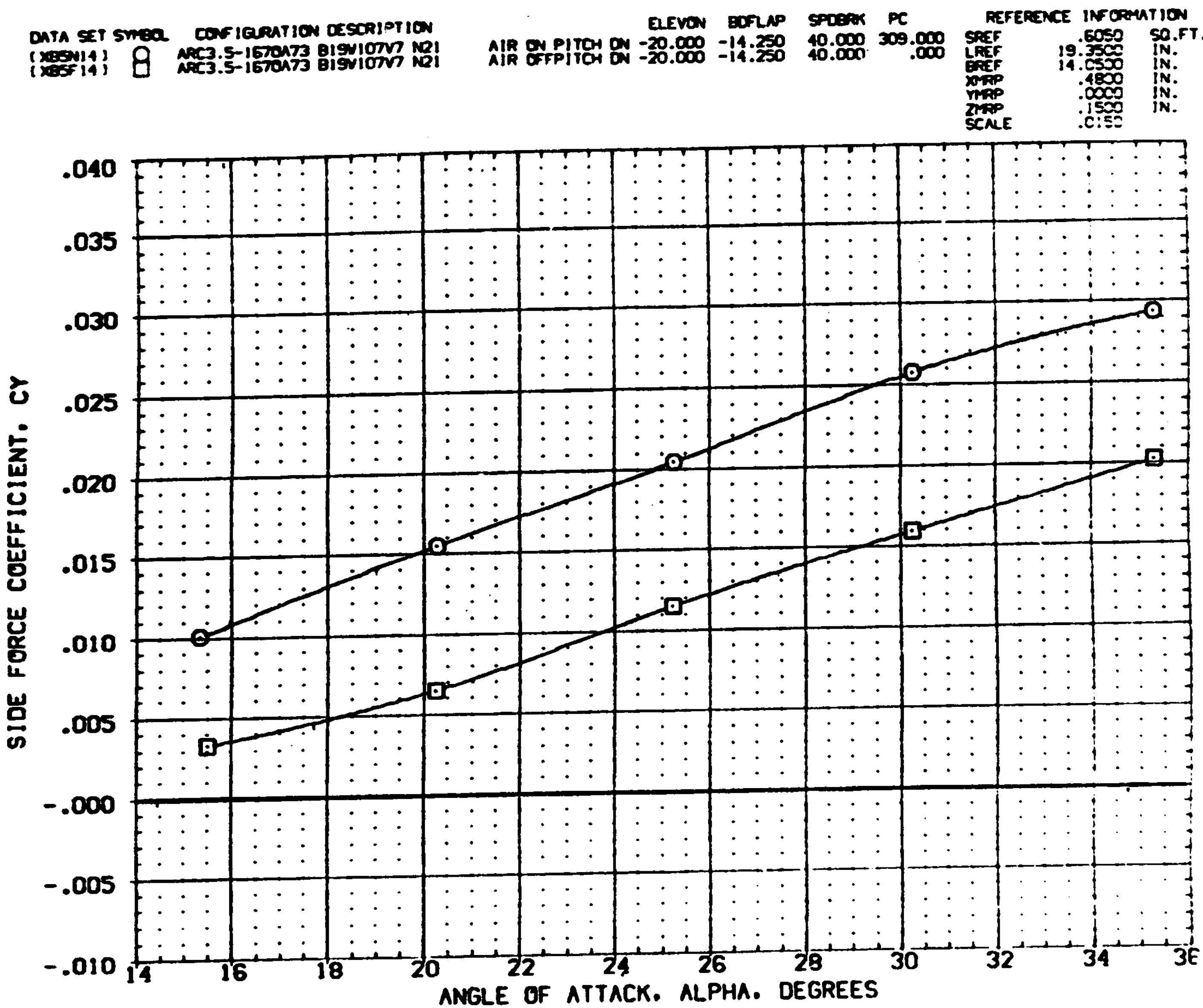


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.153.
(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N14)	○	ARC3.5-1670A73 B19V107V7 N21	AIR ON PITCH ON	-20.000	-14.250	40.000	309.000
(XB5F14)	□	ARC3.5-1670A73 B19V107V7 N21	AIR OFF PITCH ON	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

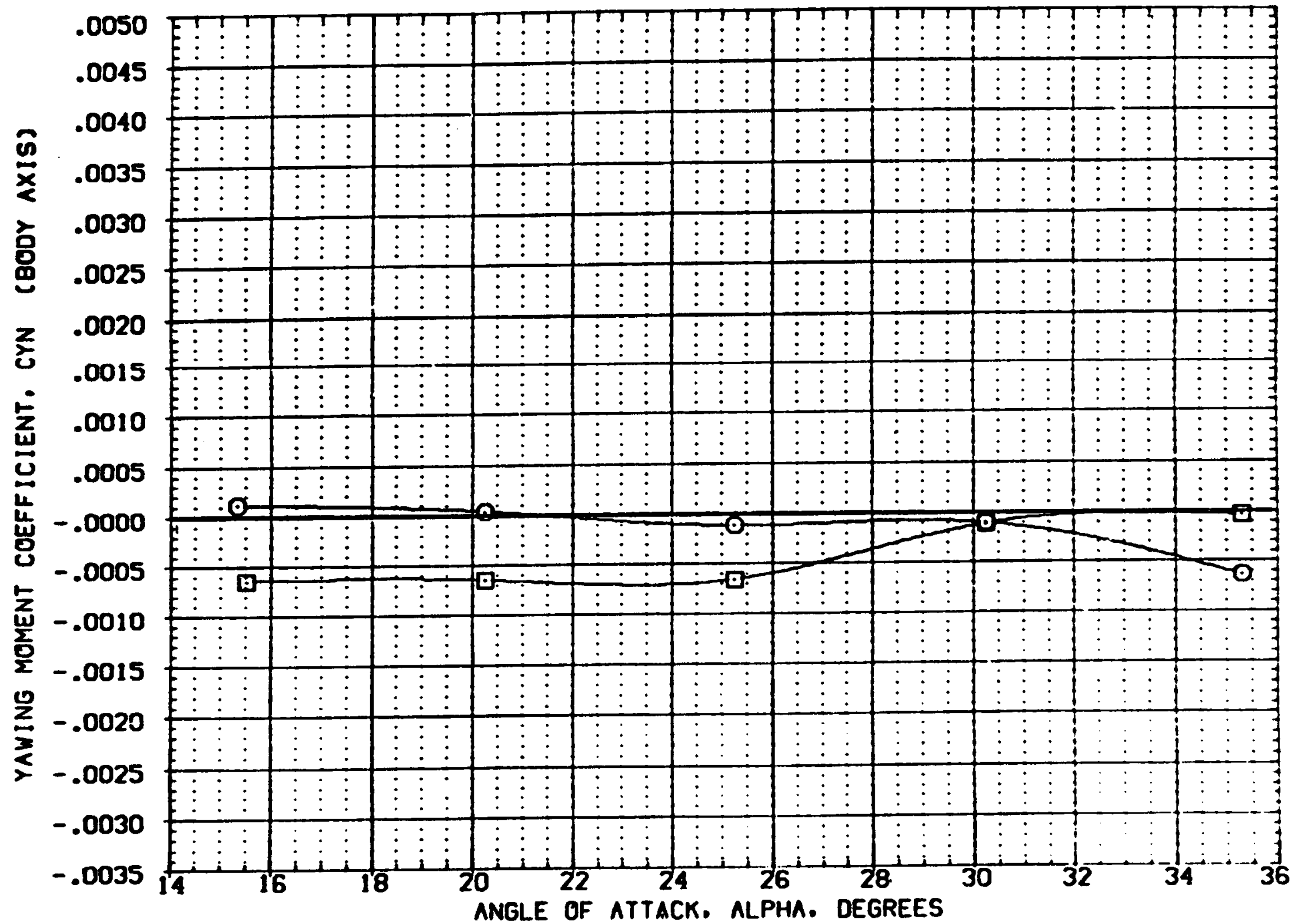


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

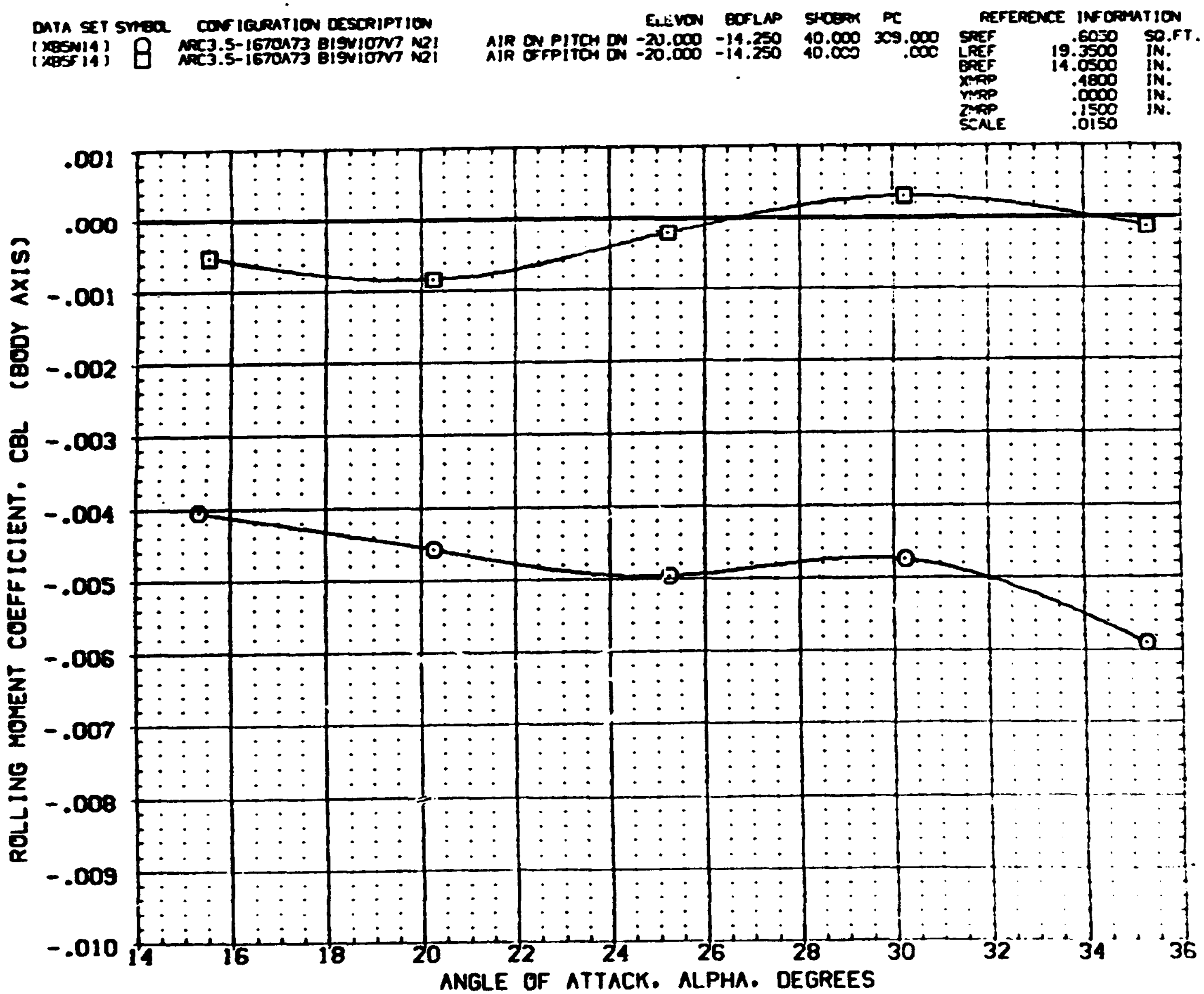


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

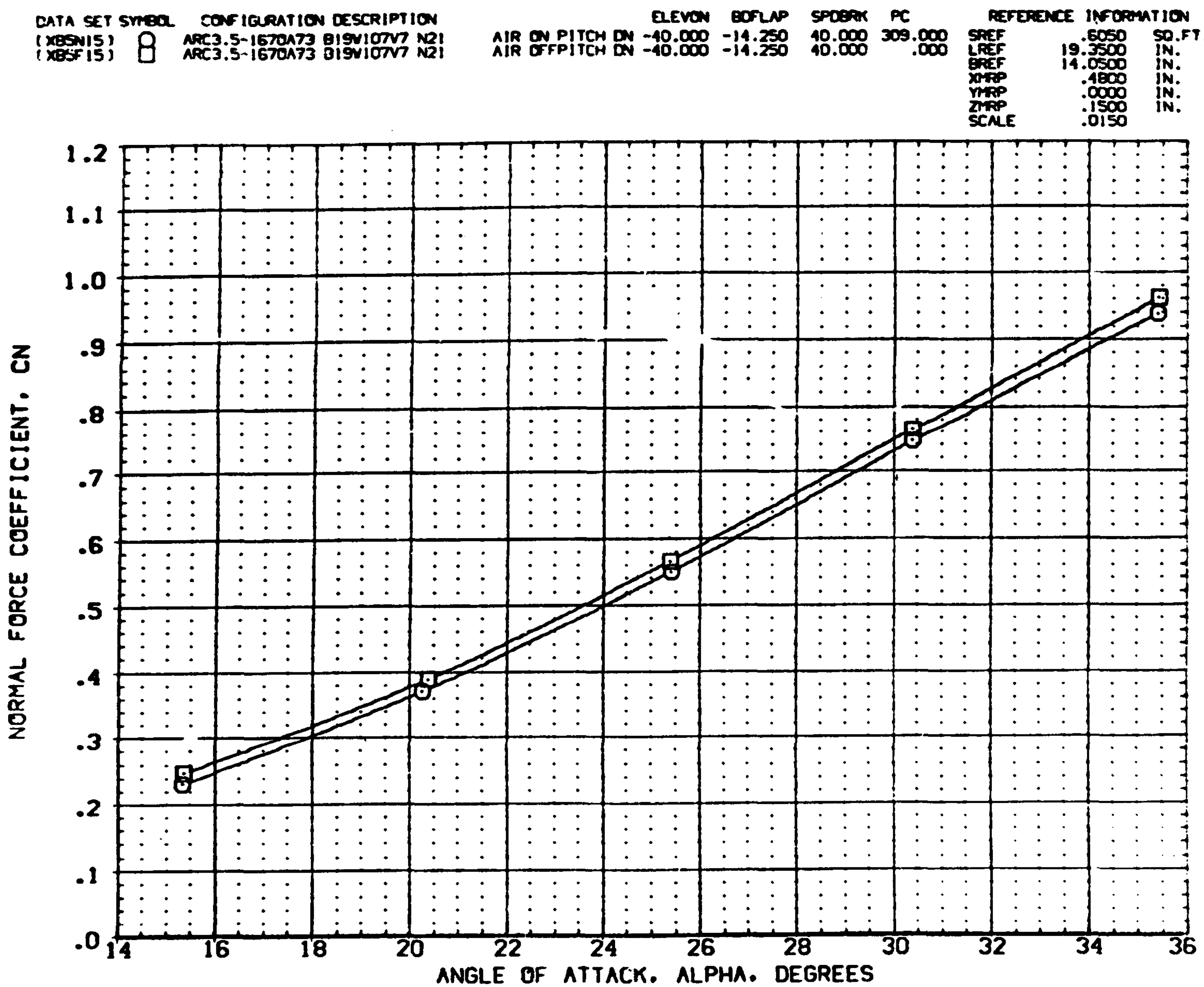


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

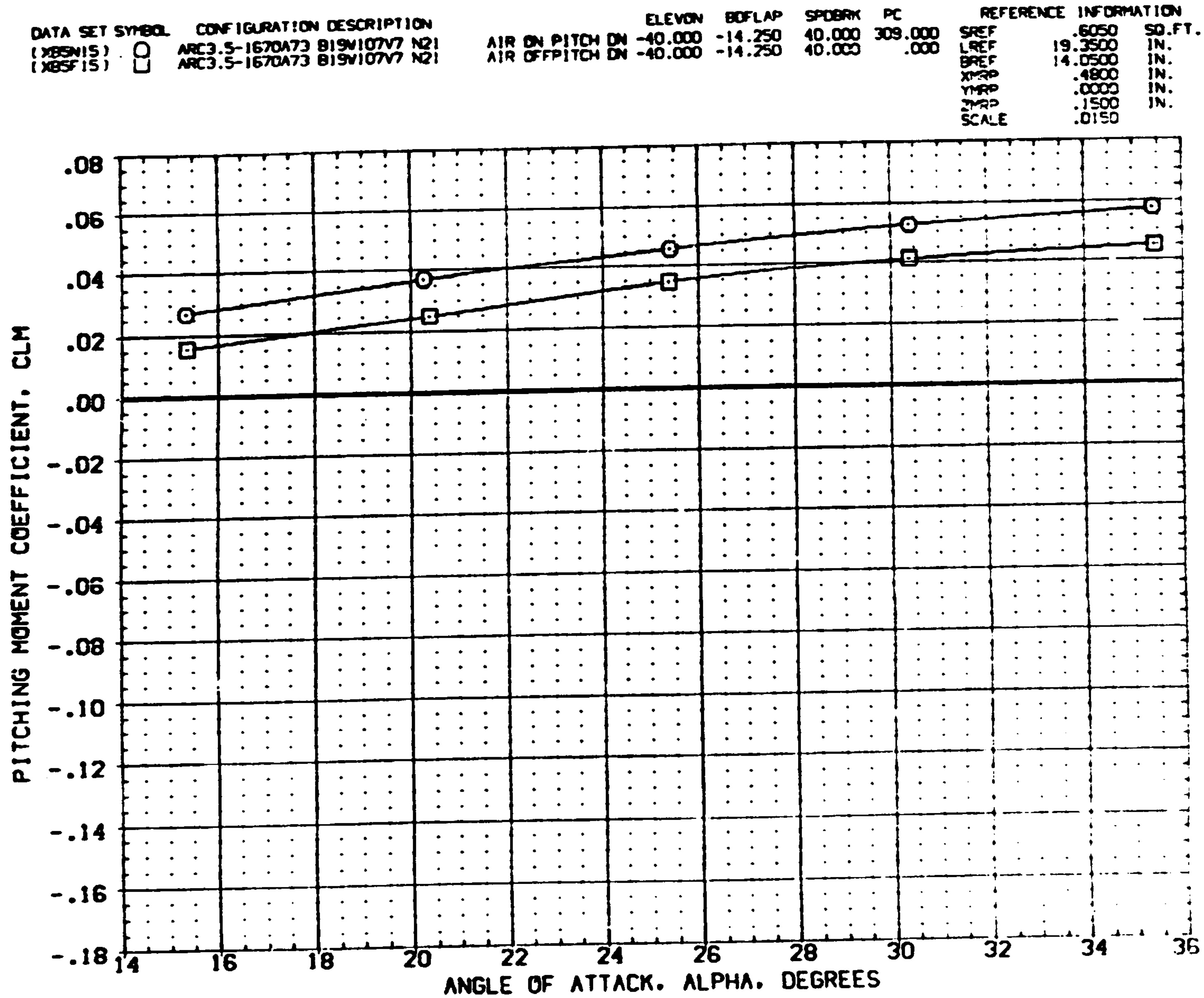


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

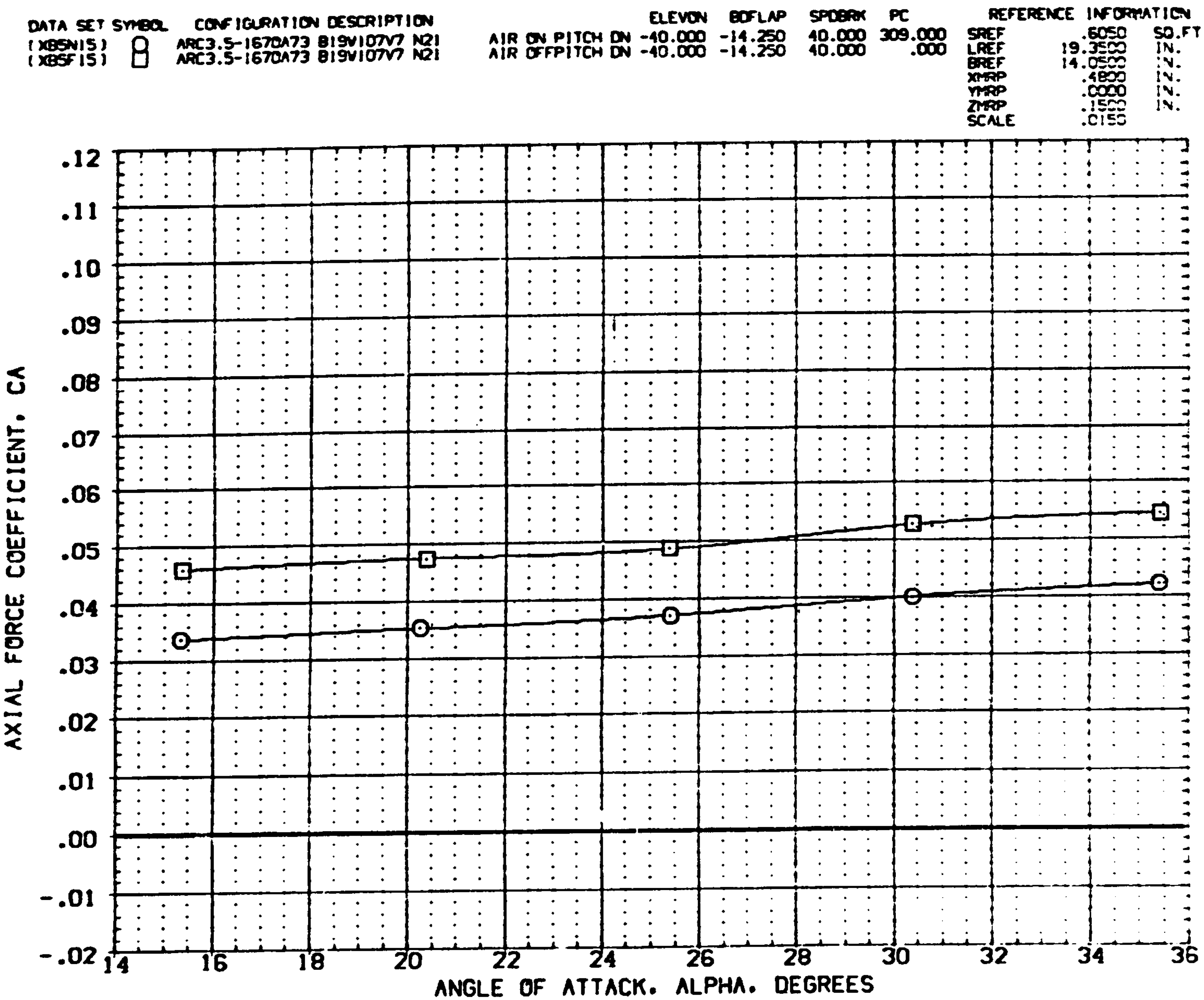


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

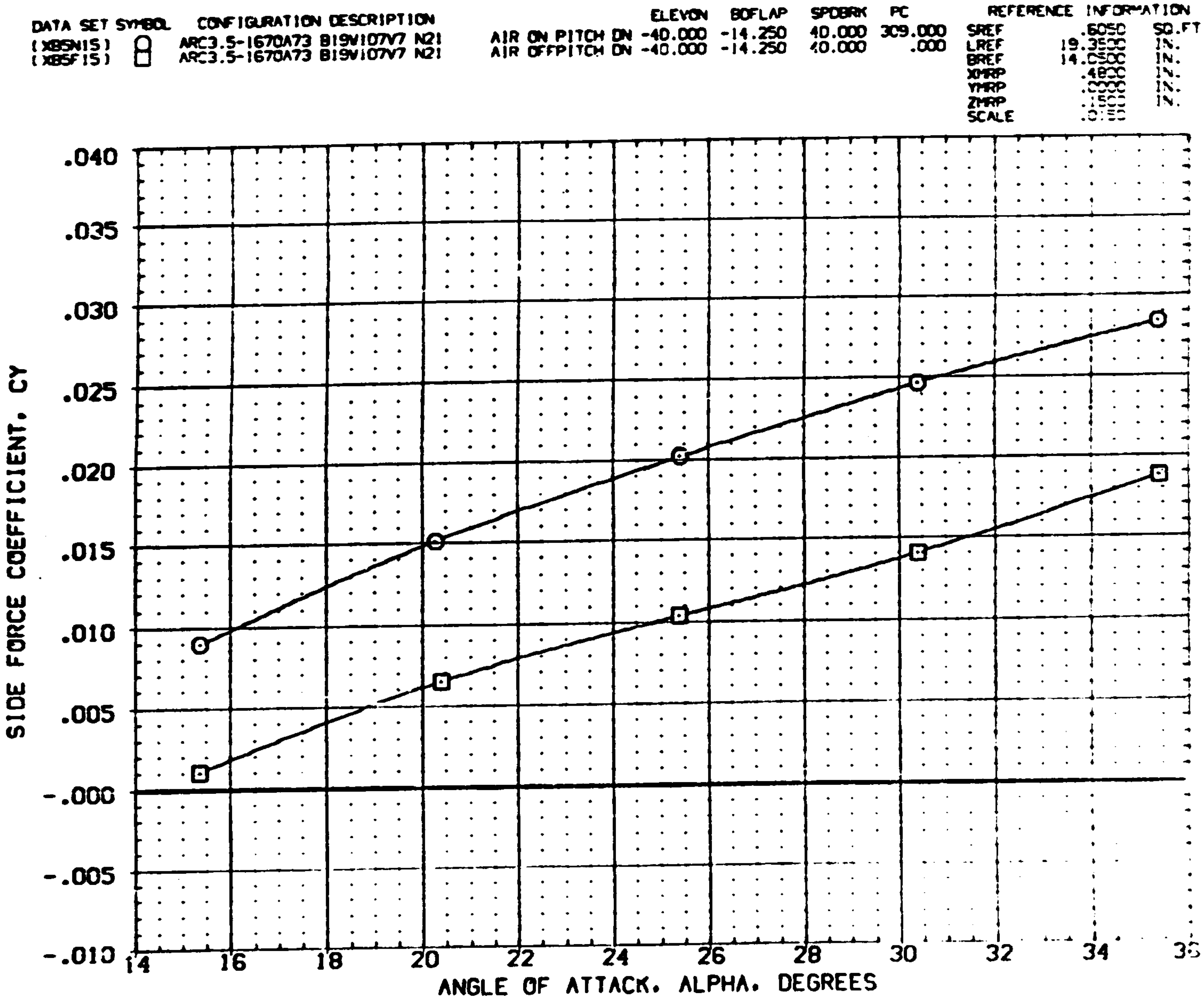


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.15?.

(A)MACH = 10.29

PAGE

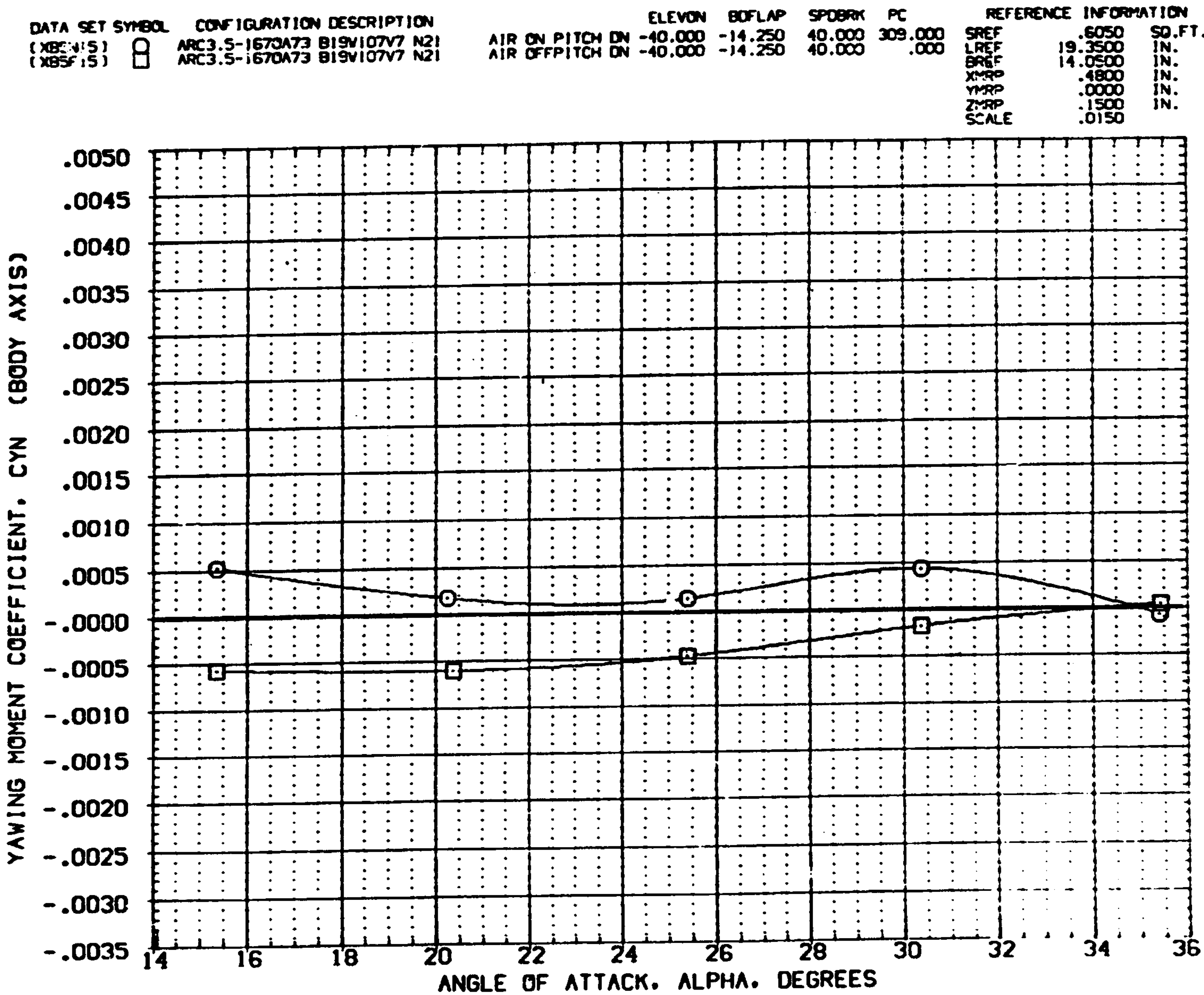


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

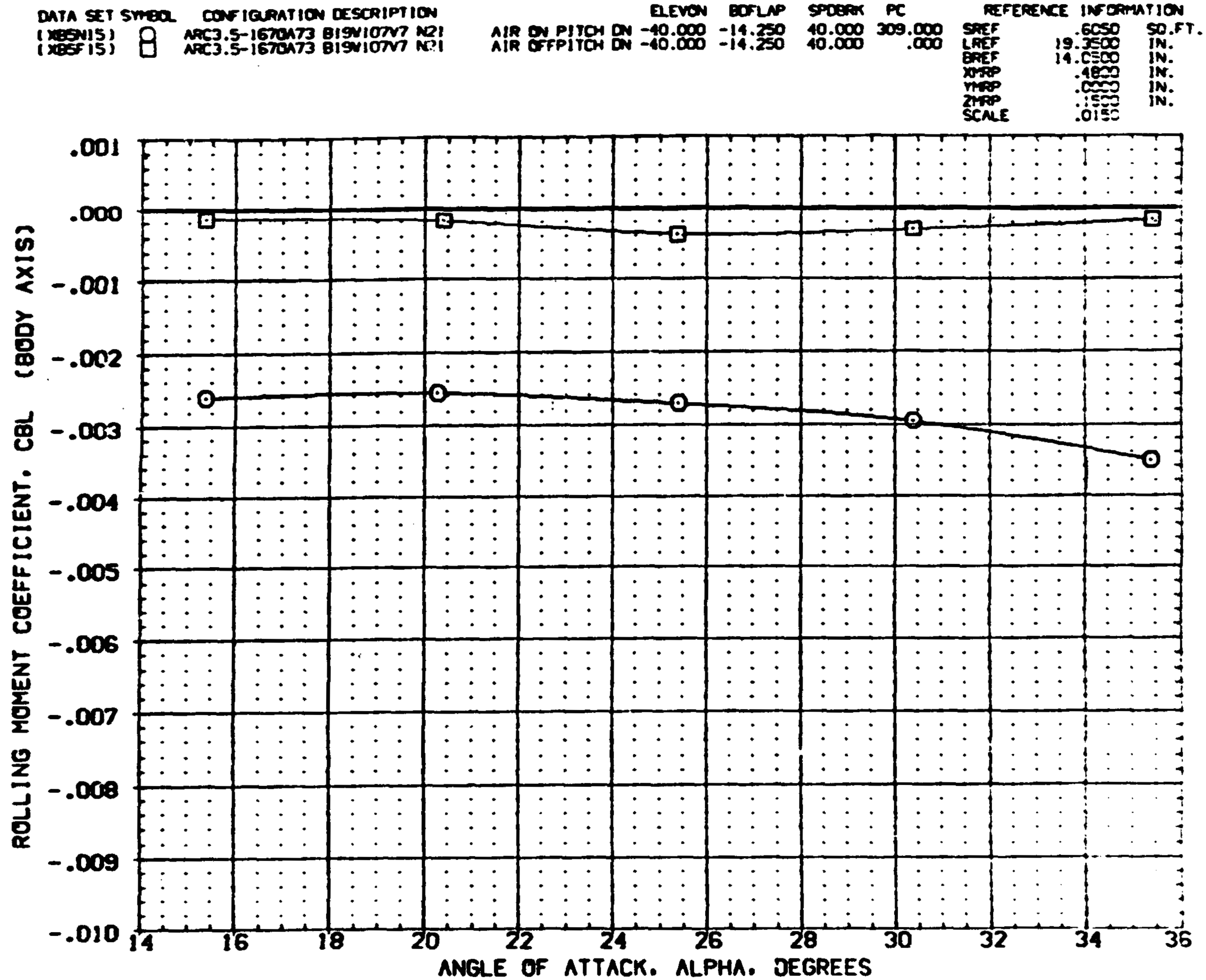


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.
(A)MACH = 10.29

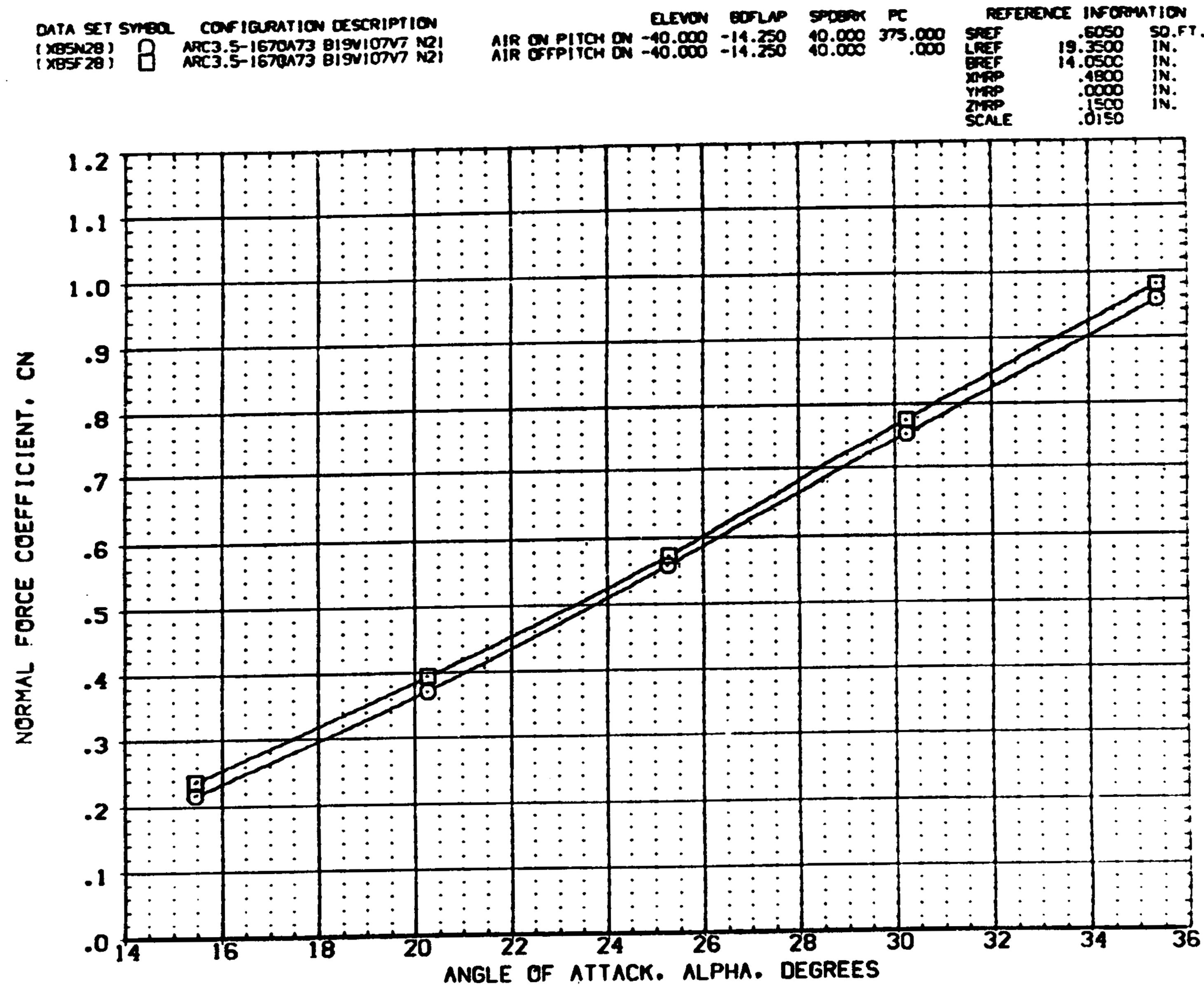


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N28)	○	ARC3.5-1670A73 B19V107V7 N21	AIR ON PITCH DN	-40.000	-14.250	40.000	375.000
(XB5F28)	□	ARC3.5-1670A73 B19V107V7 N21	AIR OFFPITCH DN	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

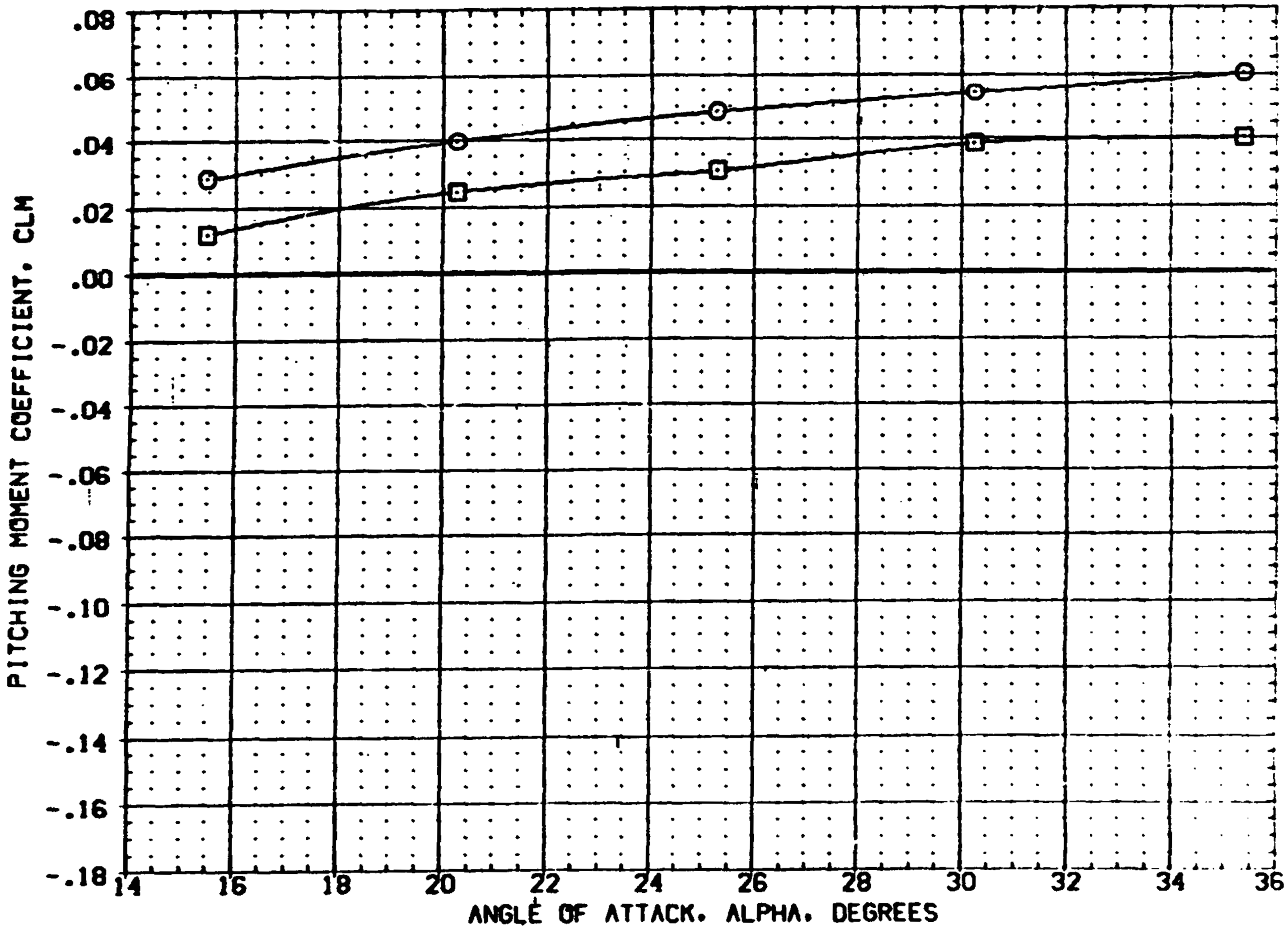


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

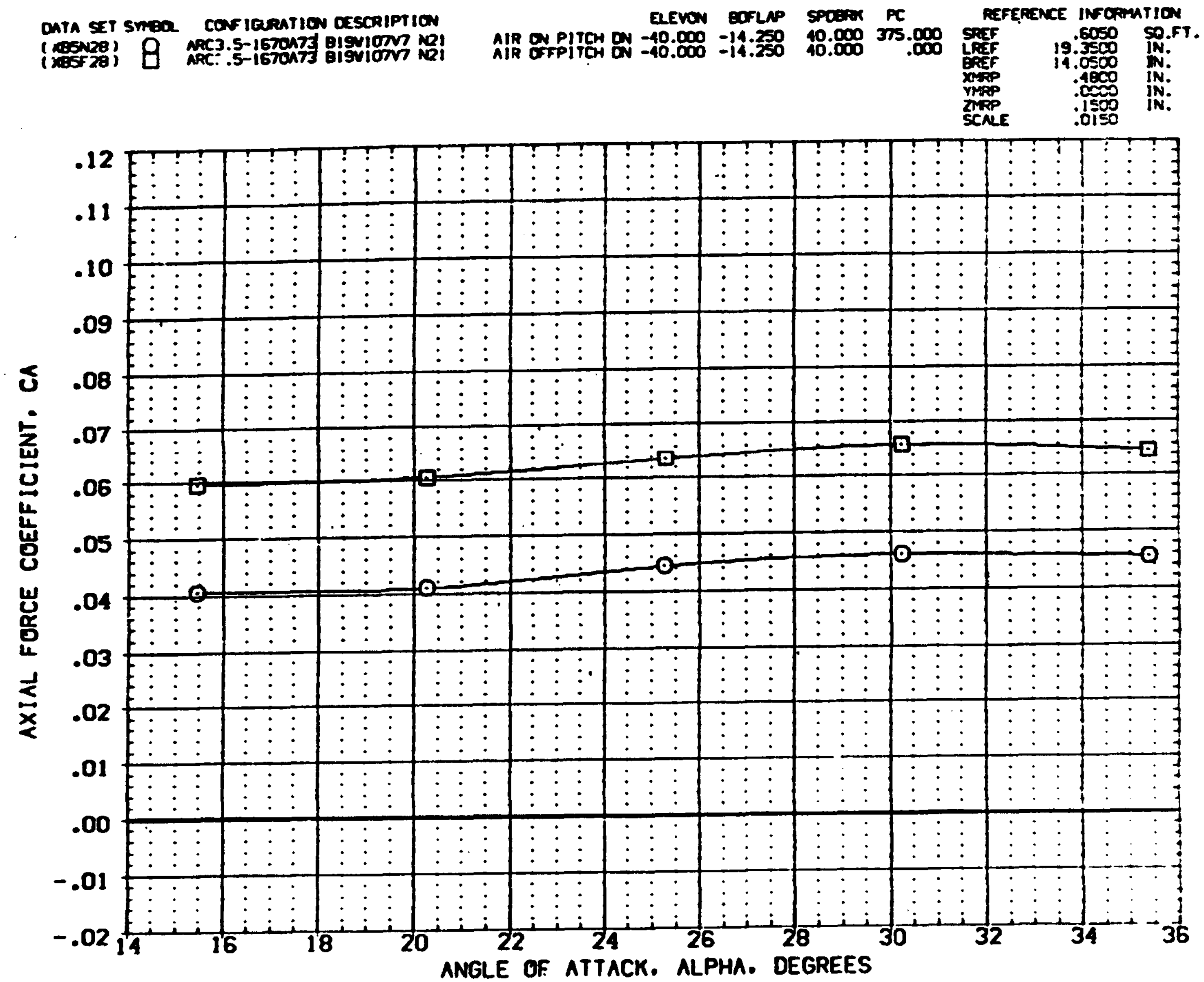


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

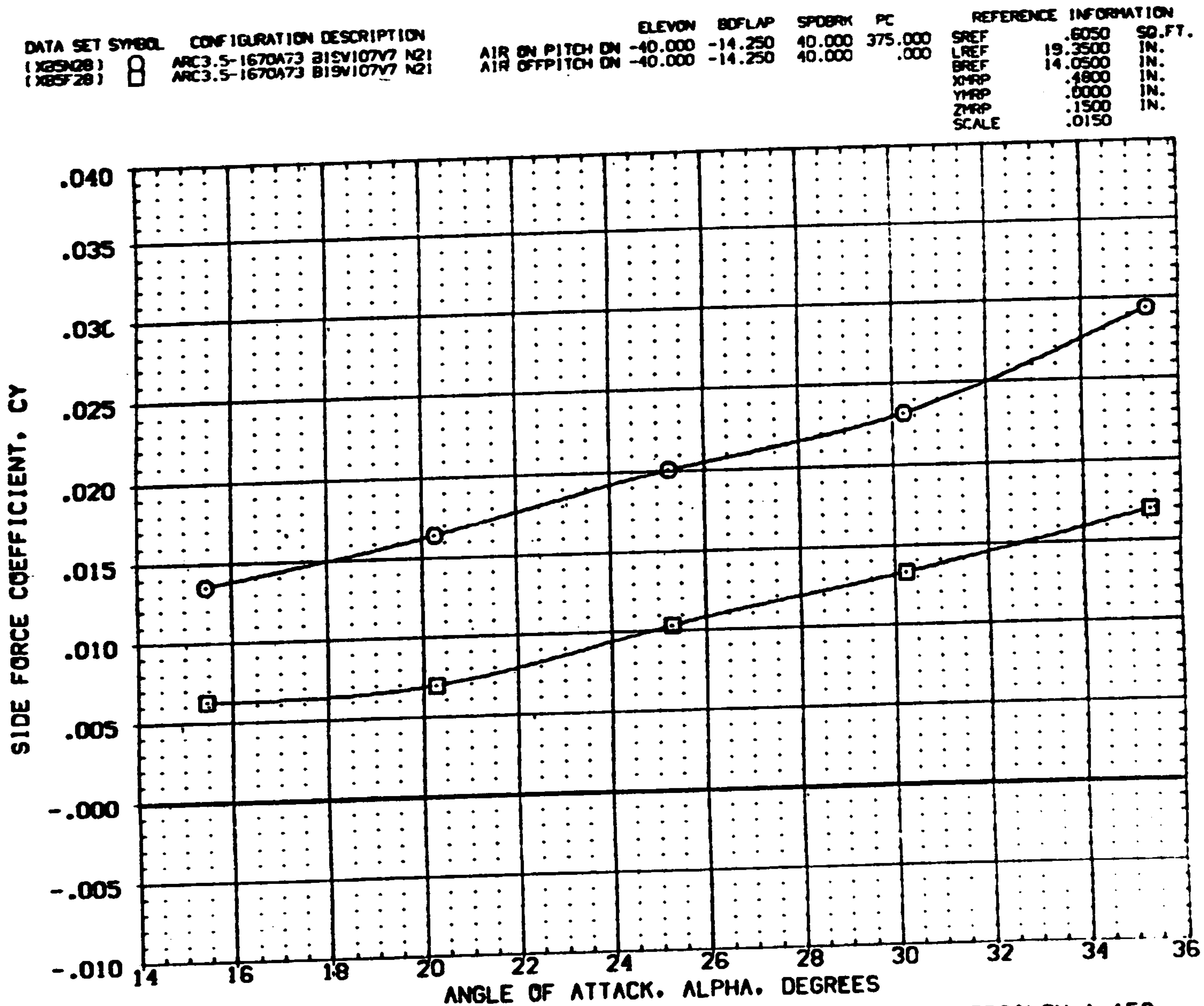


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

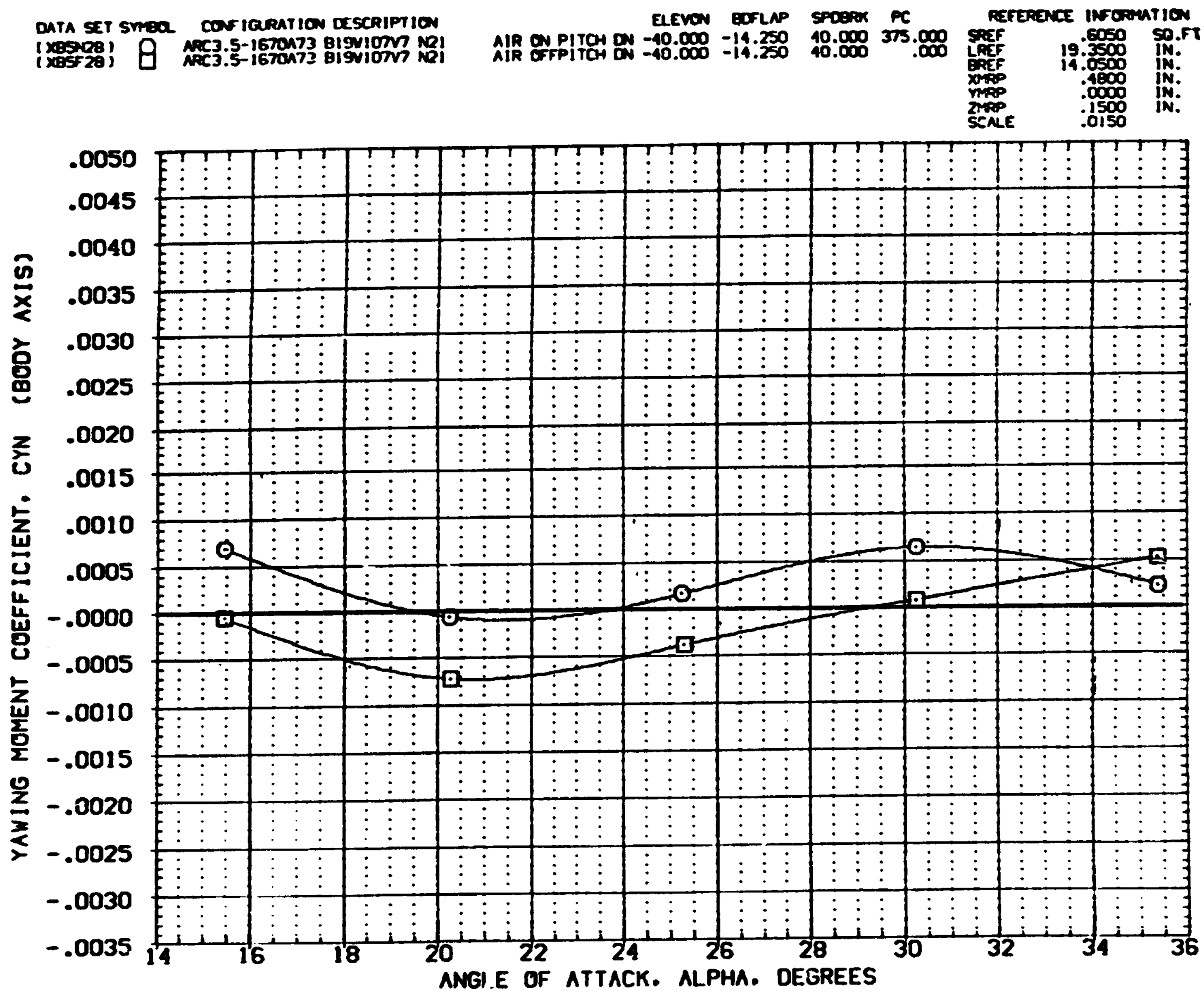


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

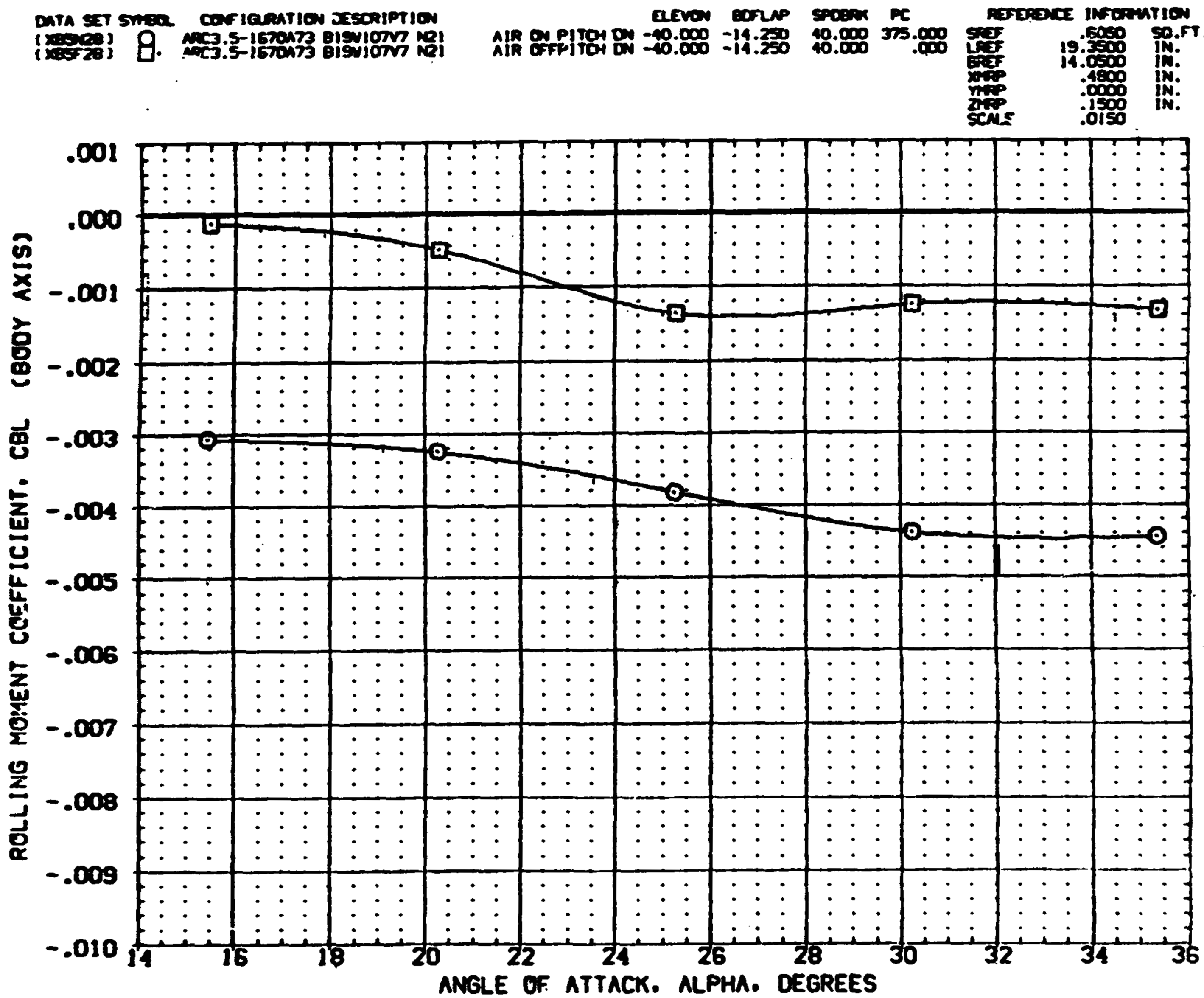


FIG. 7 EFFECTS OF RCS JET FLOWFIELD INTERACTIONS (PITCH DOWN), EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N21)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	-40.000	-14.250	40.000	314.000
(XB5F21)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

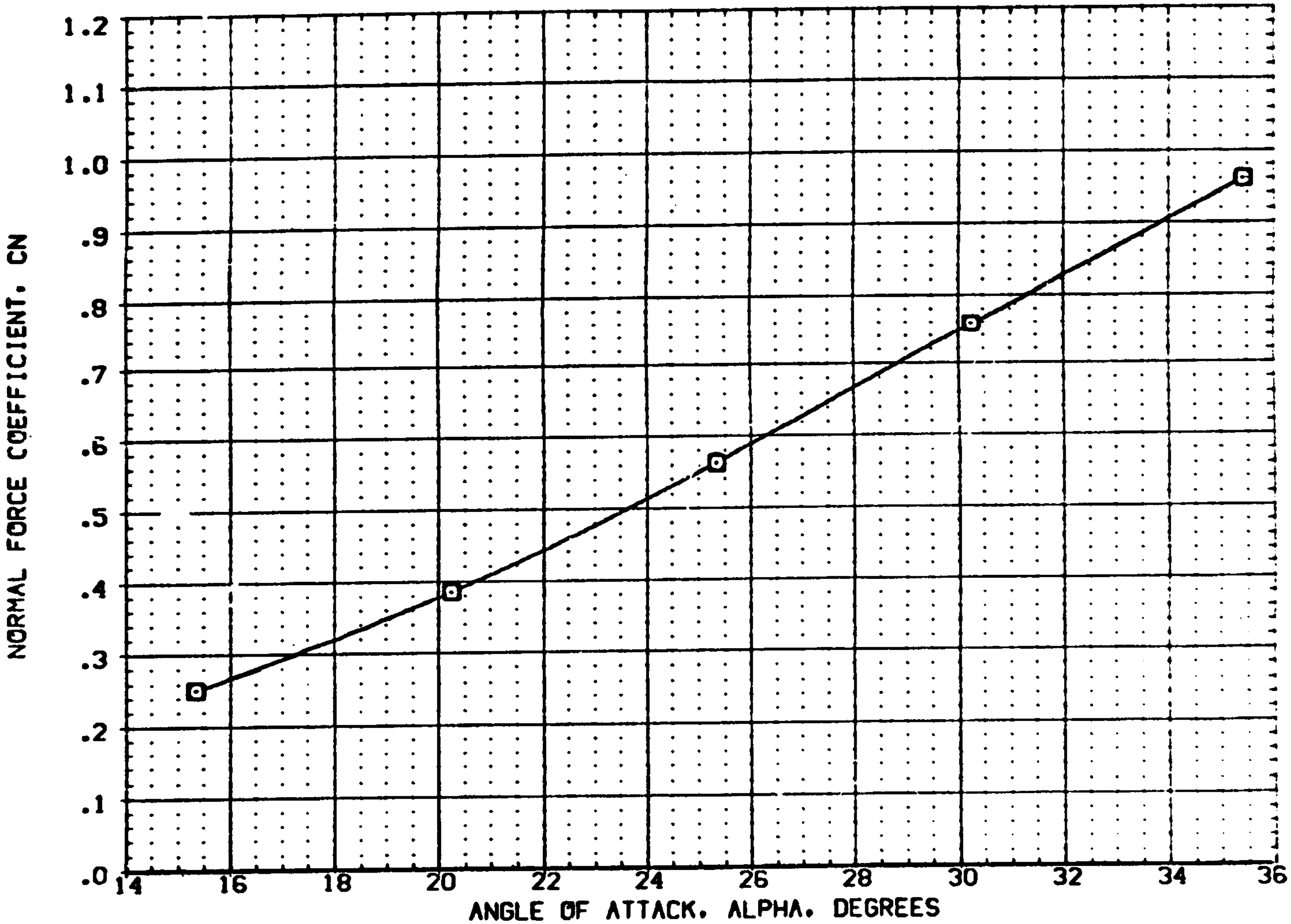


FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

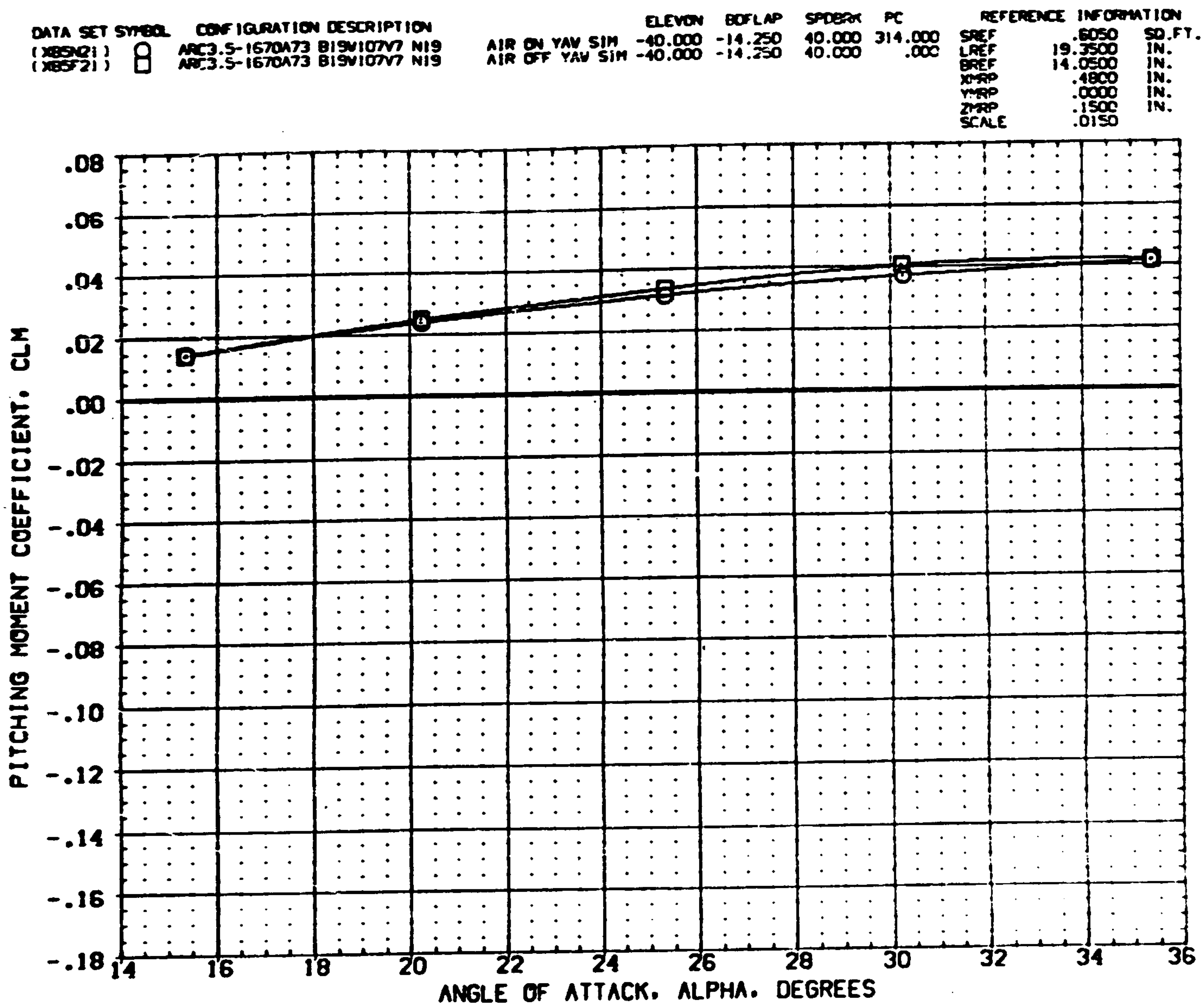


FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N21)	O	ARC3.5-167OA73 B19V107V7 N19	AIR ON YAW SIM	-40.000	-14.250	40.000	314.000
(XB5F21)	□	ARC3.5-167OA73 B19V107V7 N19	AIR OFF YAW SIM	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

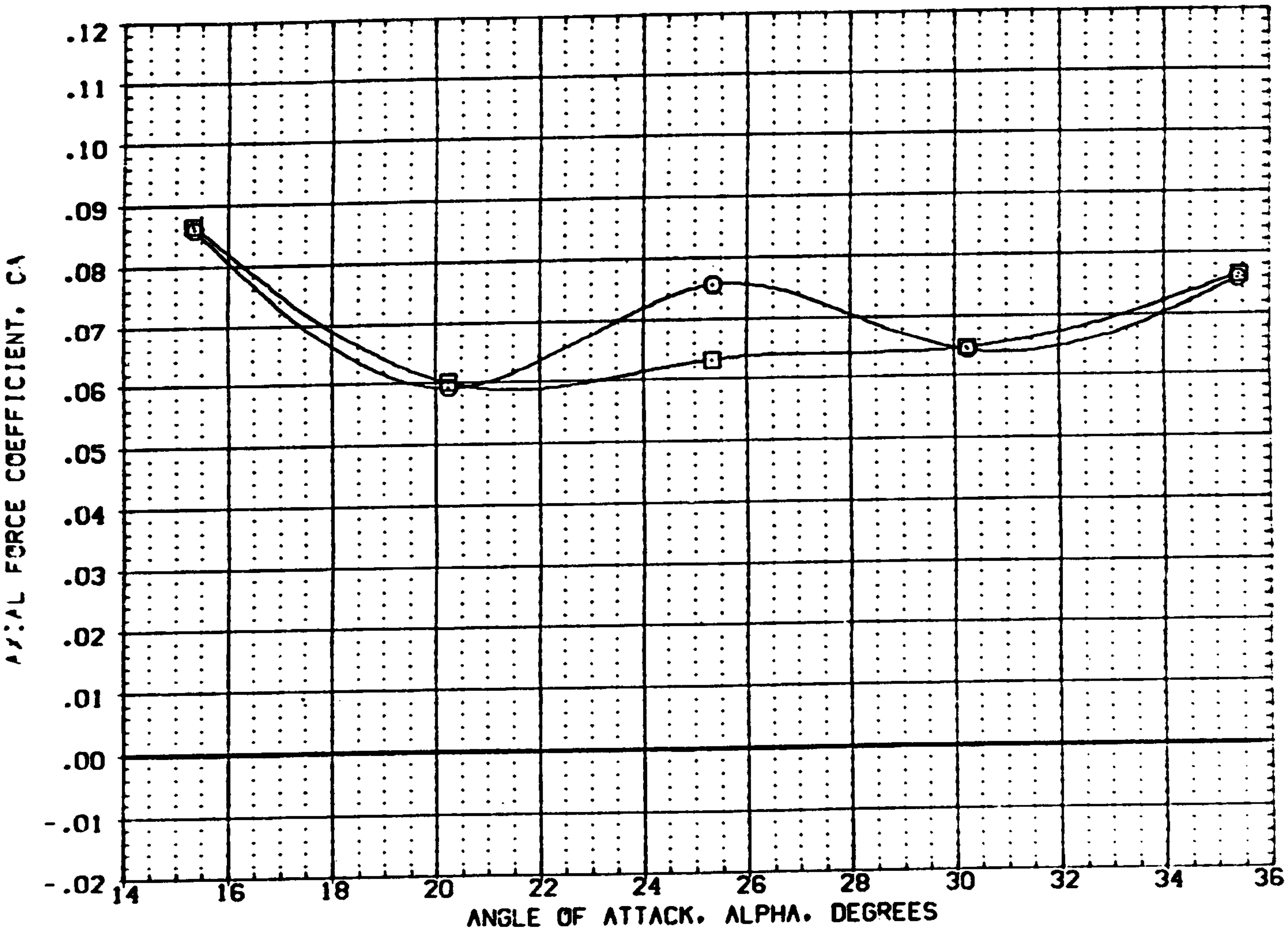


FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N21)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	-40.000	-14.250	40.000	314.000
(XE5F21)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
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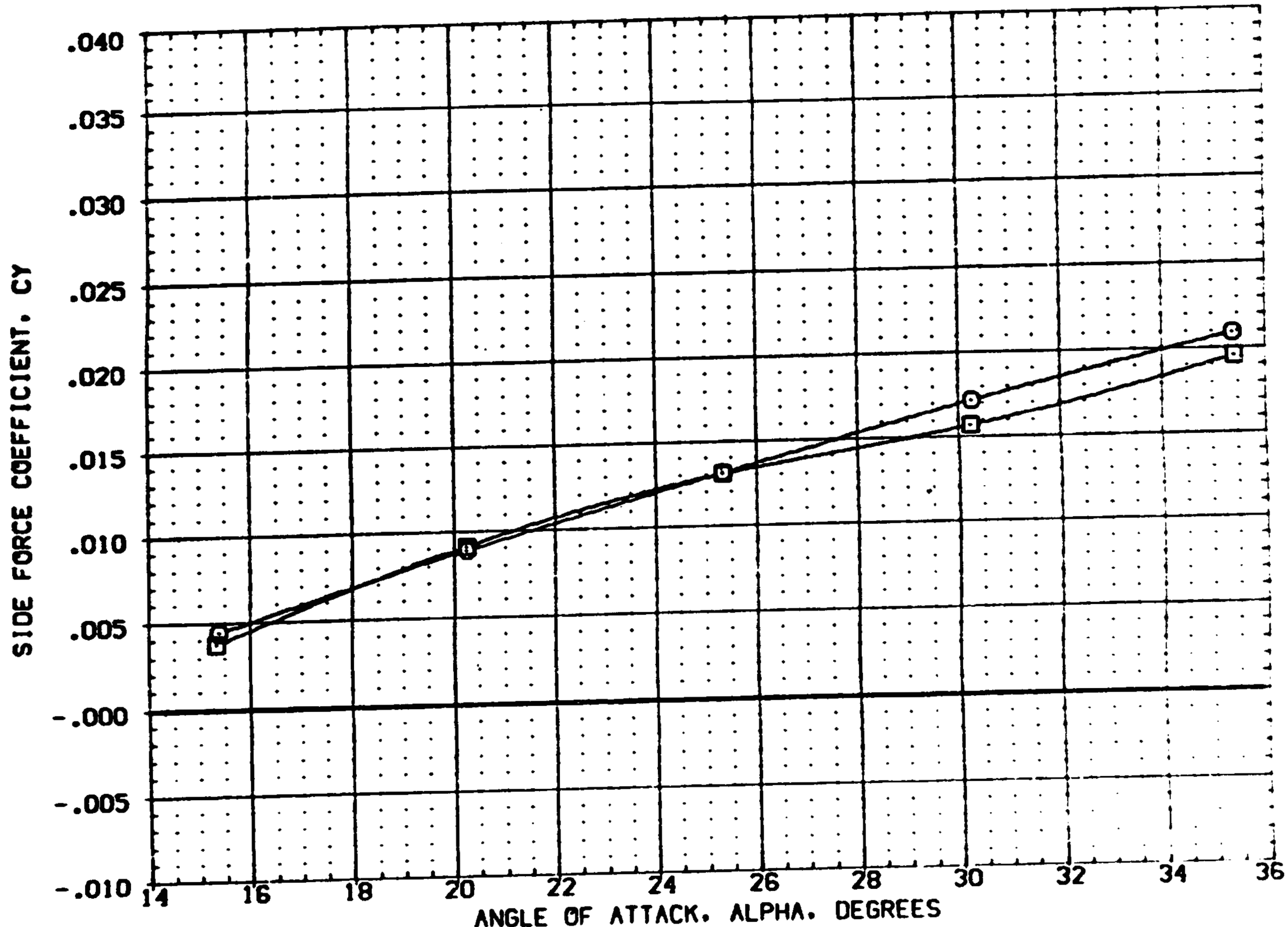

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N21)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	-40.000	-14.250	40.000	314.000
(XB5F21)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

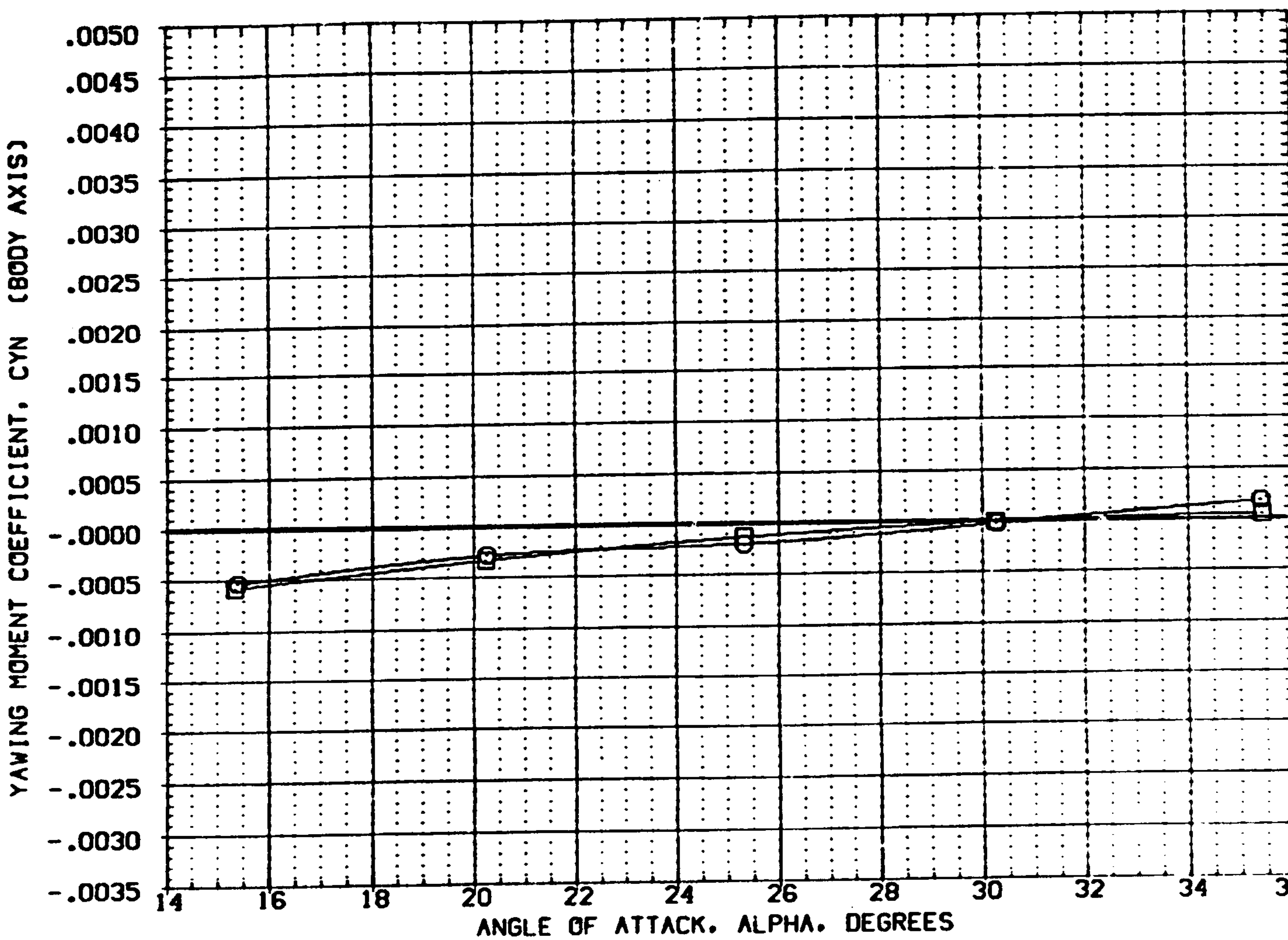

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N21)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	-40.000	-14.250	40.000	314.000
(XB5F21)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4900	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

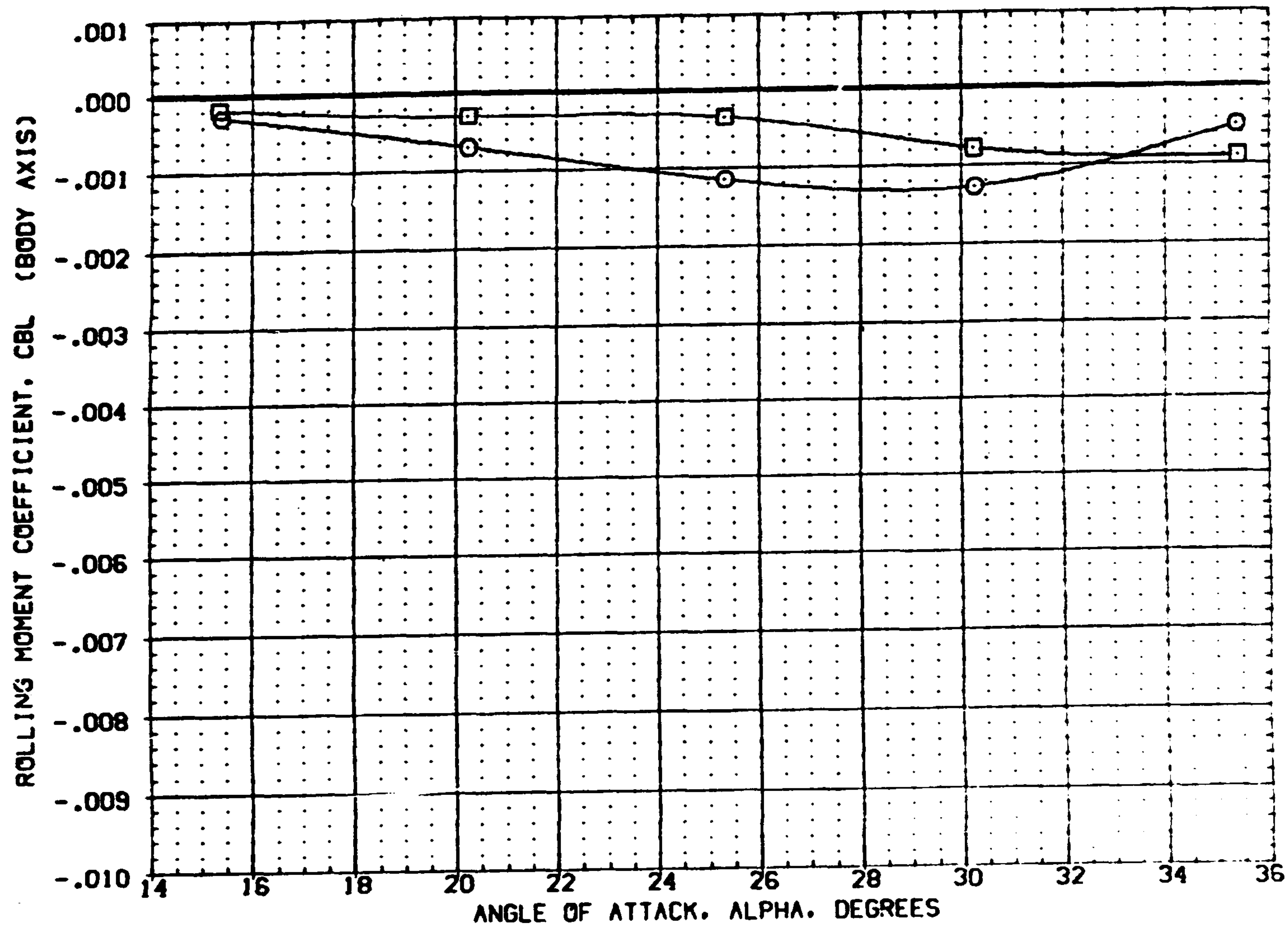

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

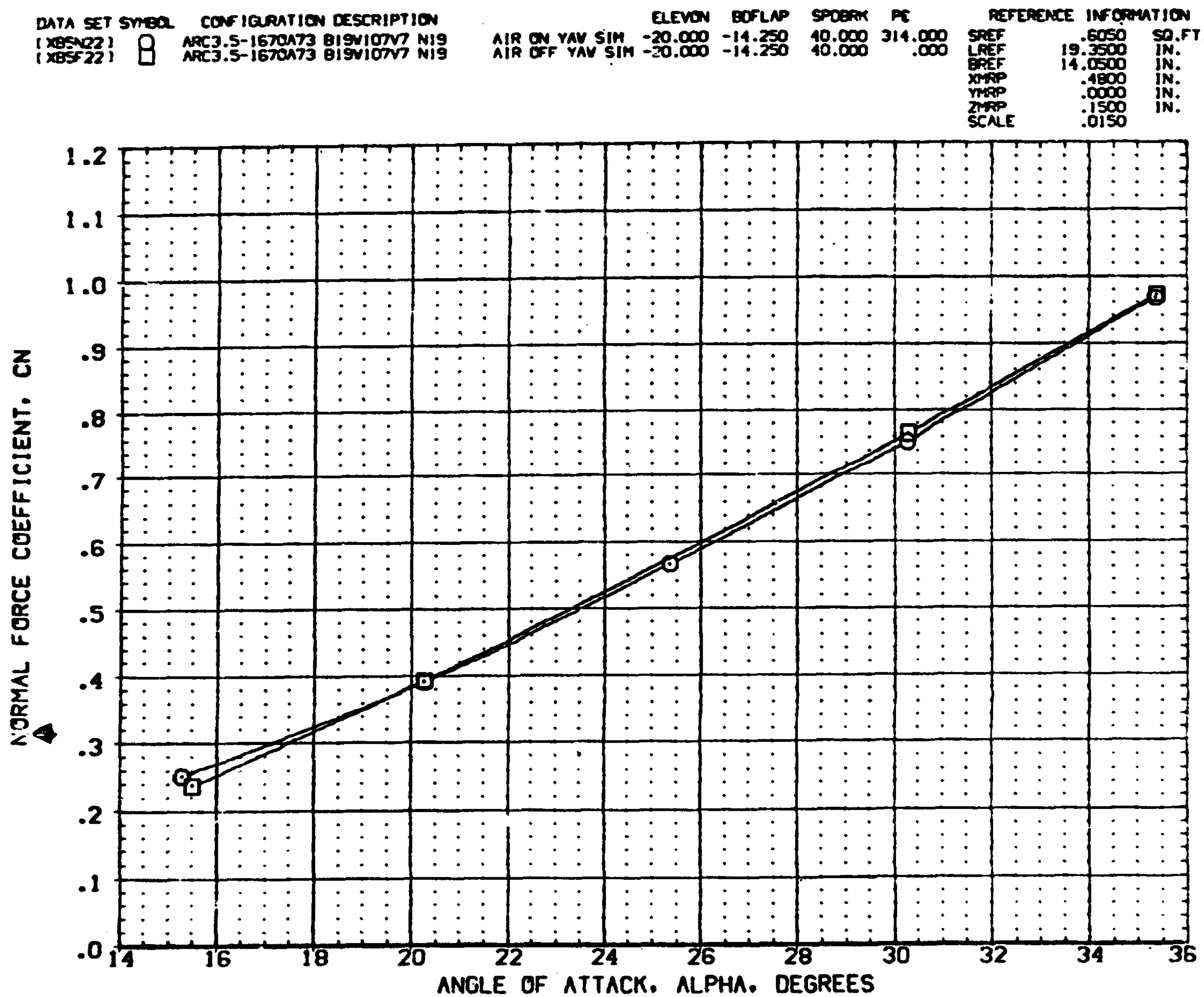

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N22)	○	ARC3.5-1670A73 B19W107V7 N19	AIR ON YAW SIM	-20.000	-14.250	40.000	314.000
(XB5F22)	□	ARC3.5-1670A73 B19W107V7 N19	AIR OFF YAW SIM	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

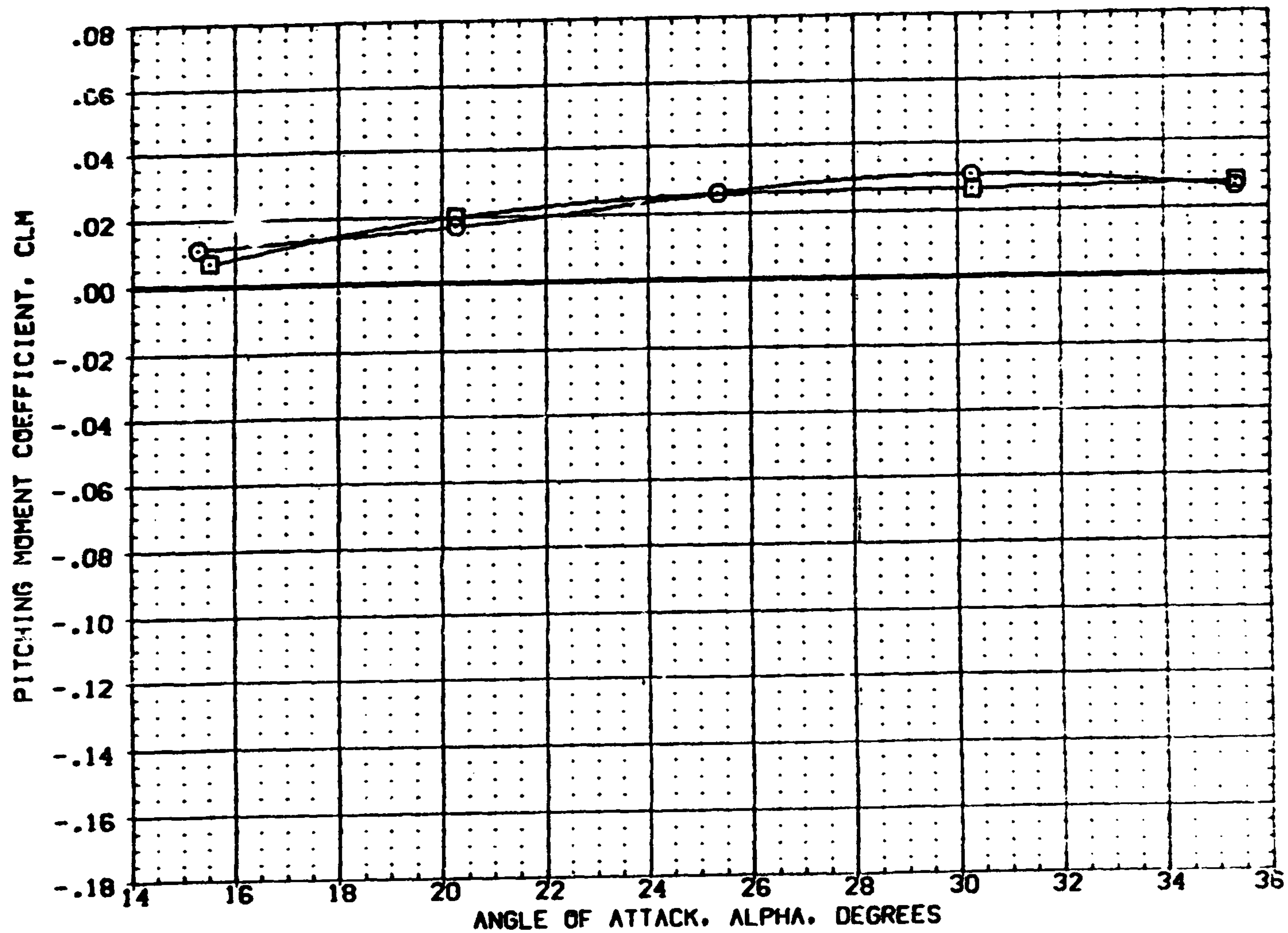

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N22)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	-20.000	-14.250	40.000	314.000
(XB5F22)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	-20.000	-14.250	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

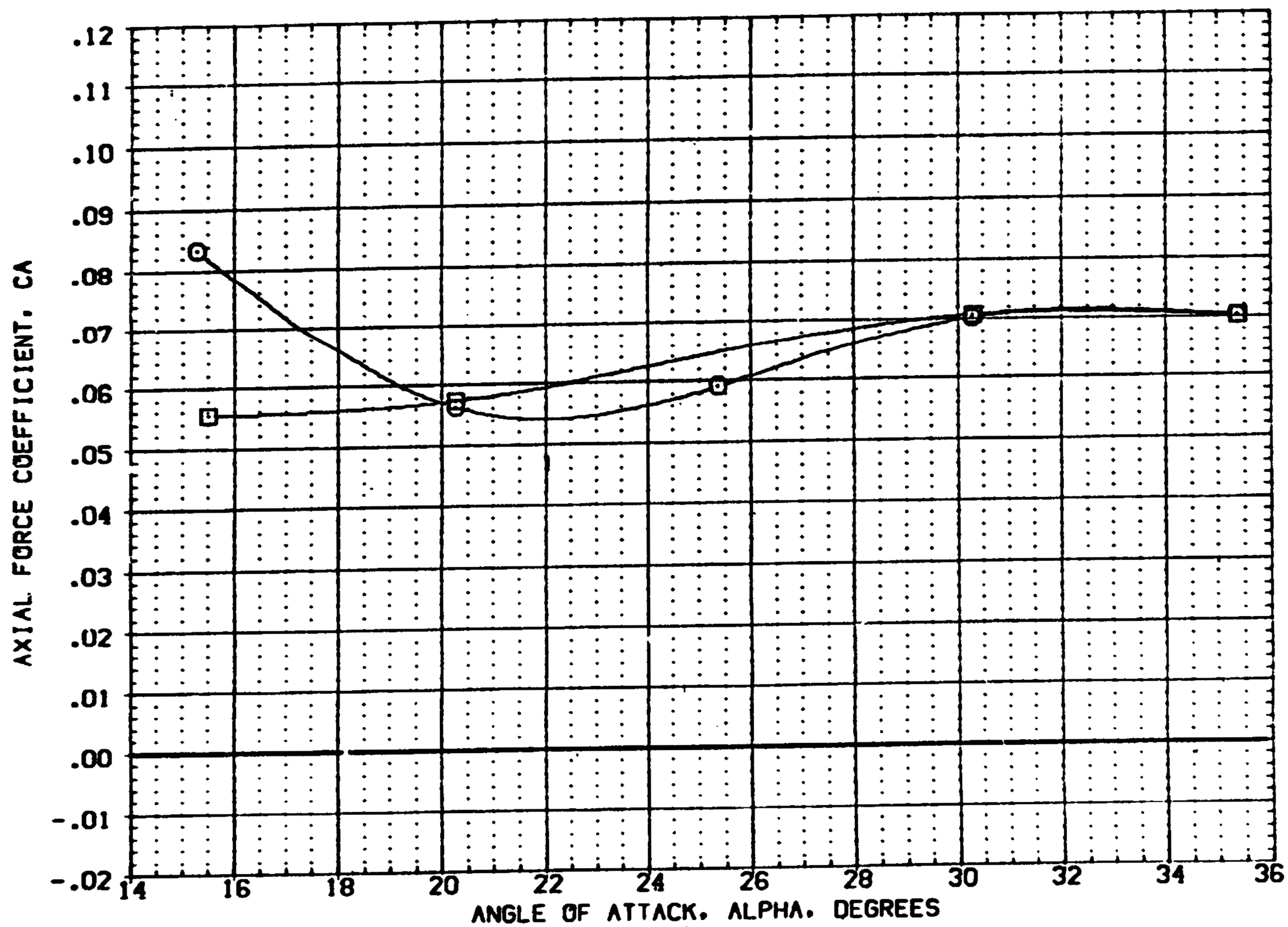

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

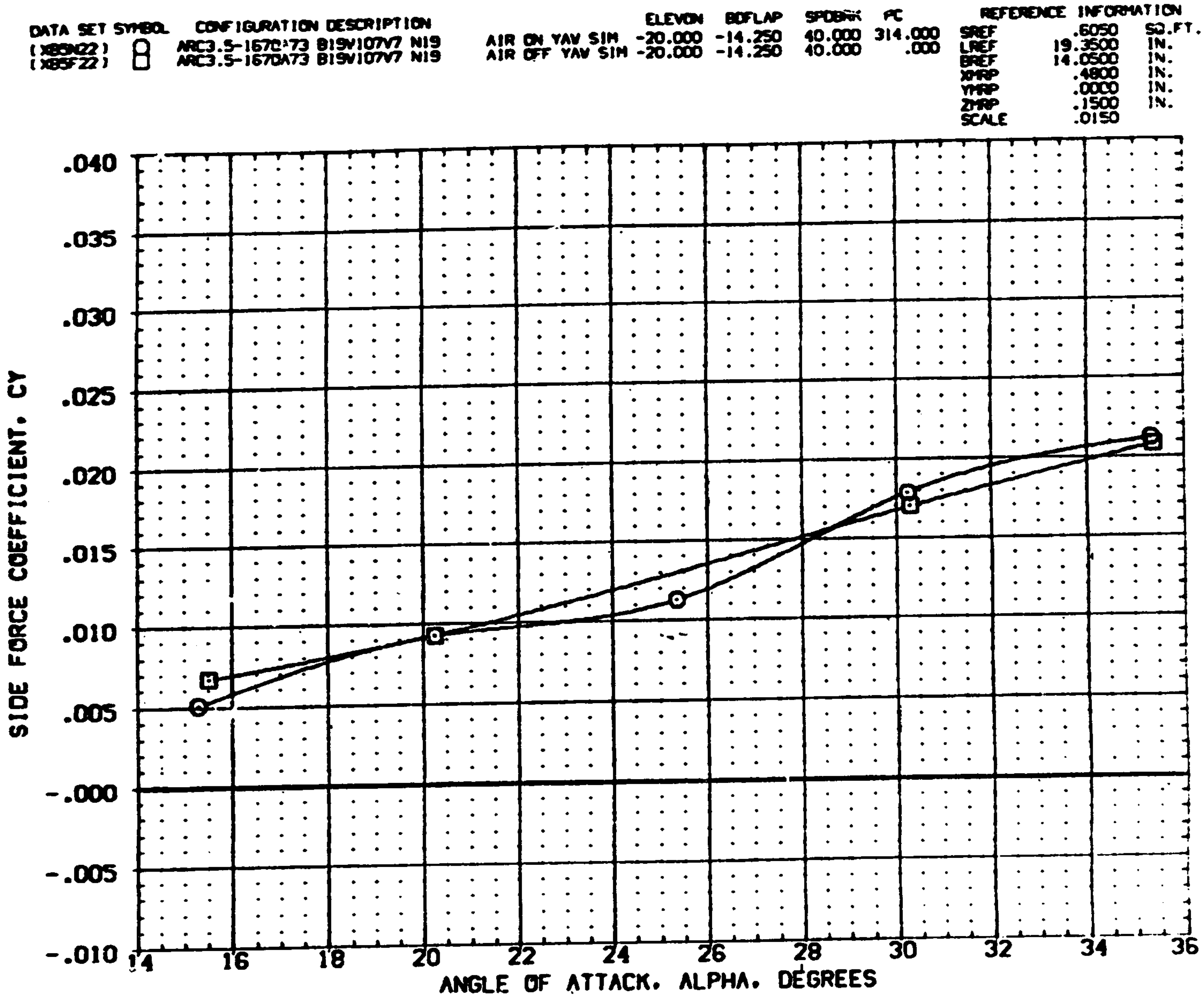

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

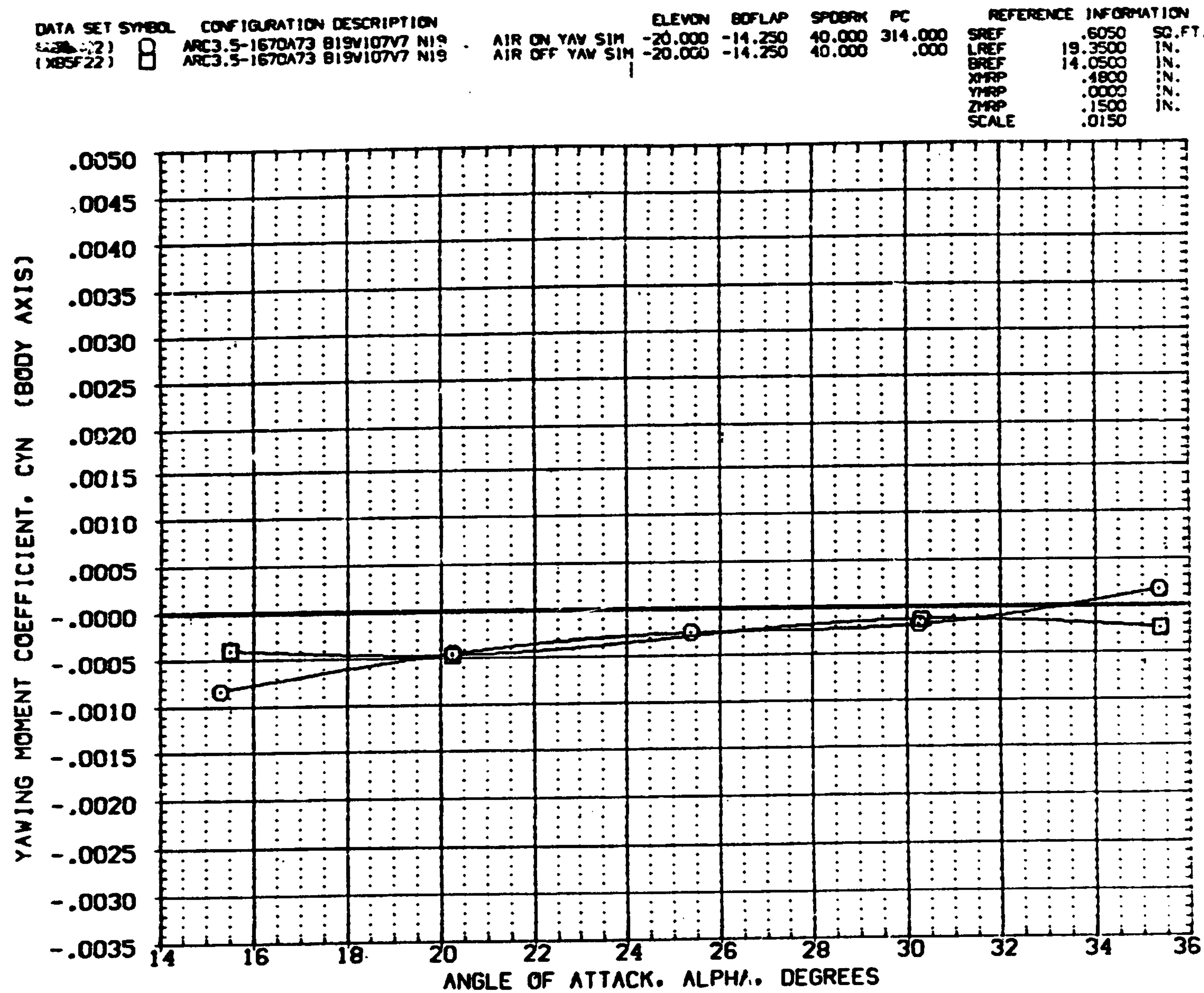

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

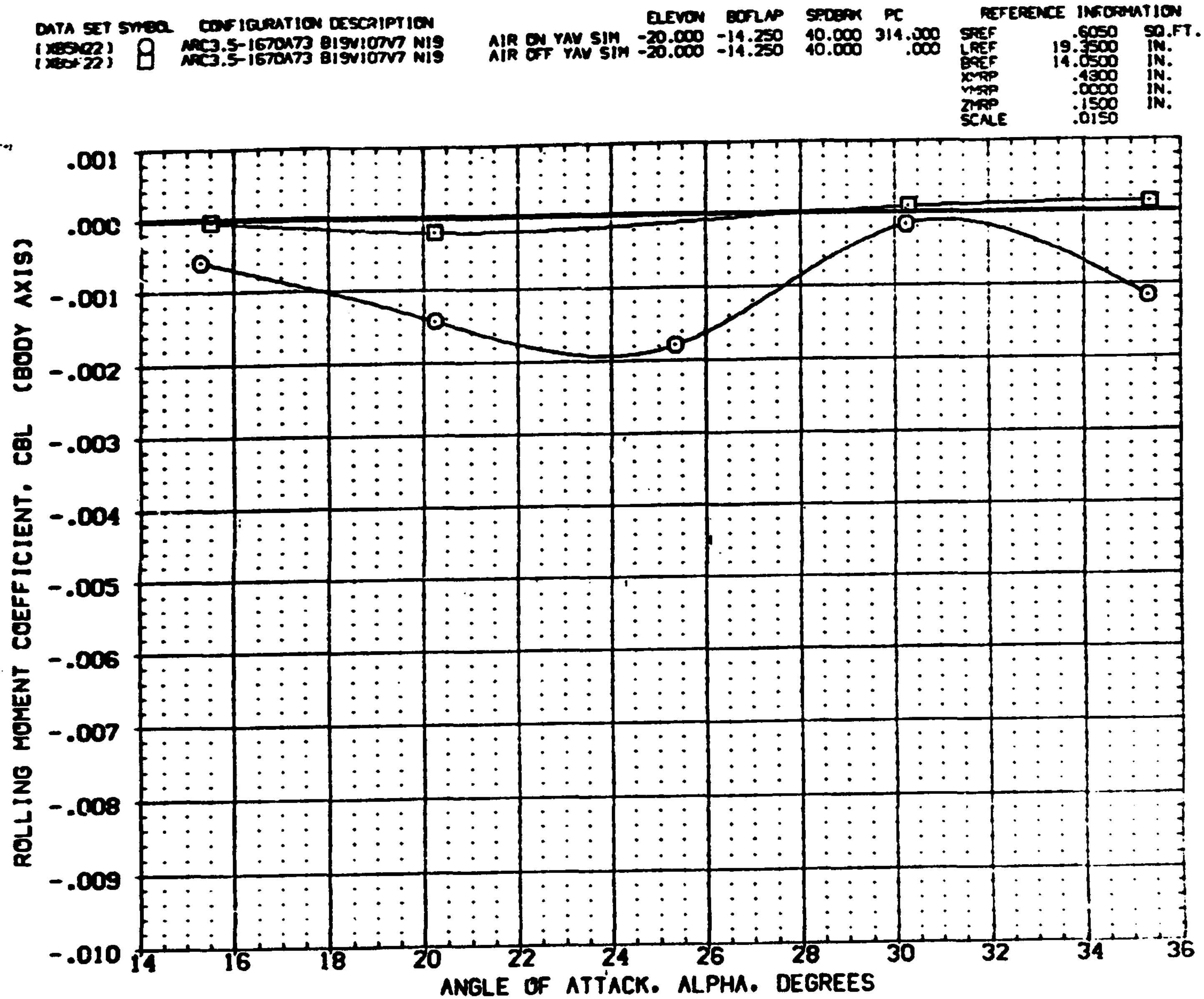

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N23)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	15.000	13.750	40.000	314.000
(XB5F23)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	15.000	13.750	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

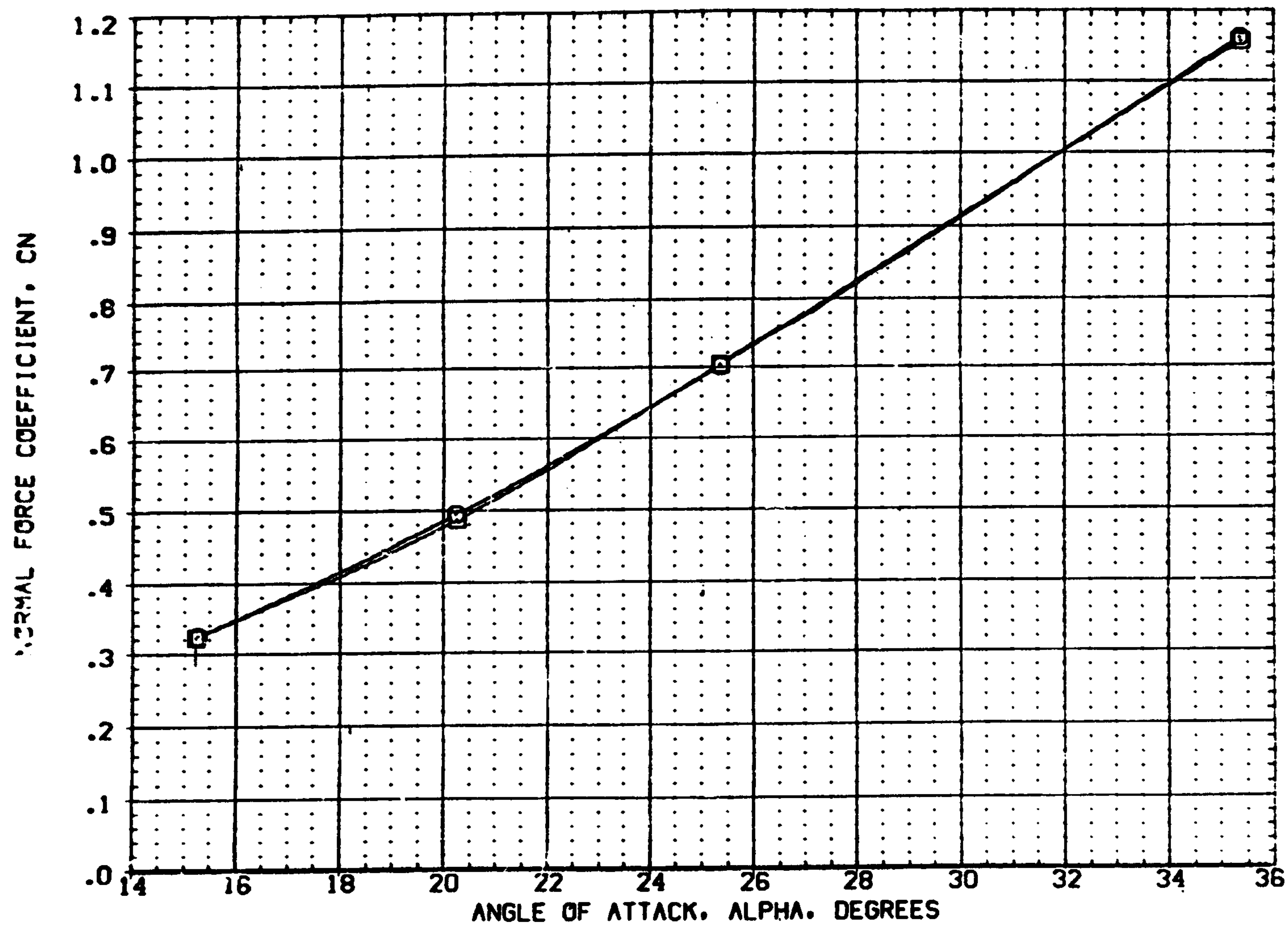

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XBSN23)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	15.000	13.750	40.000	314.000
(XBSF23)	□	ARC3.5-1570A73 B19V107V7 N19	AIR OFF YAW SIM	15.000	13.750	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
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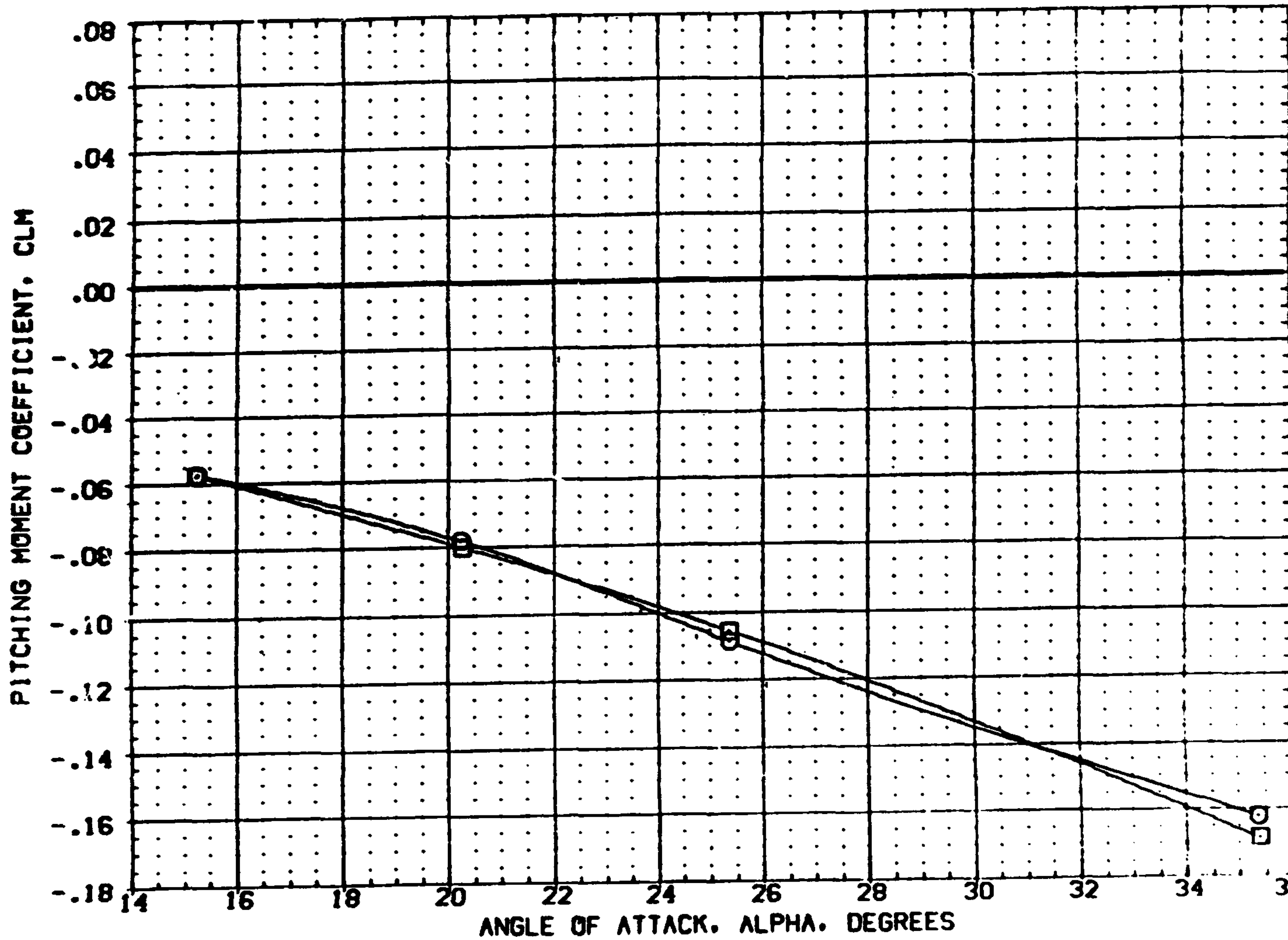

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N23)	O	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	15.000	13.750	40.000	314.000
(XB5F23)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	15.000	13.750	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
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SCALE	.0150	

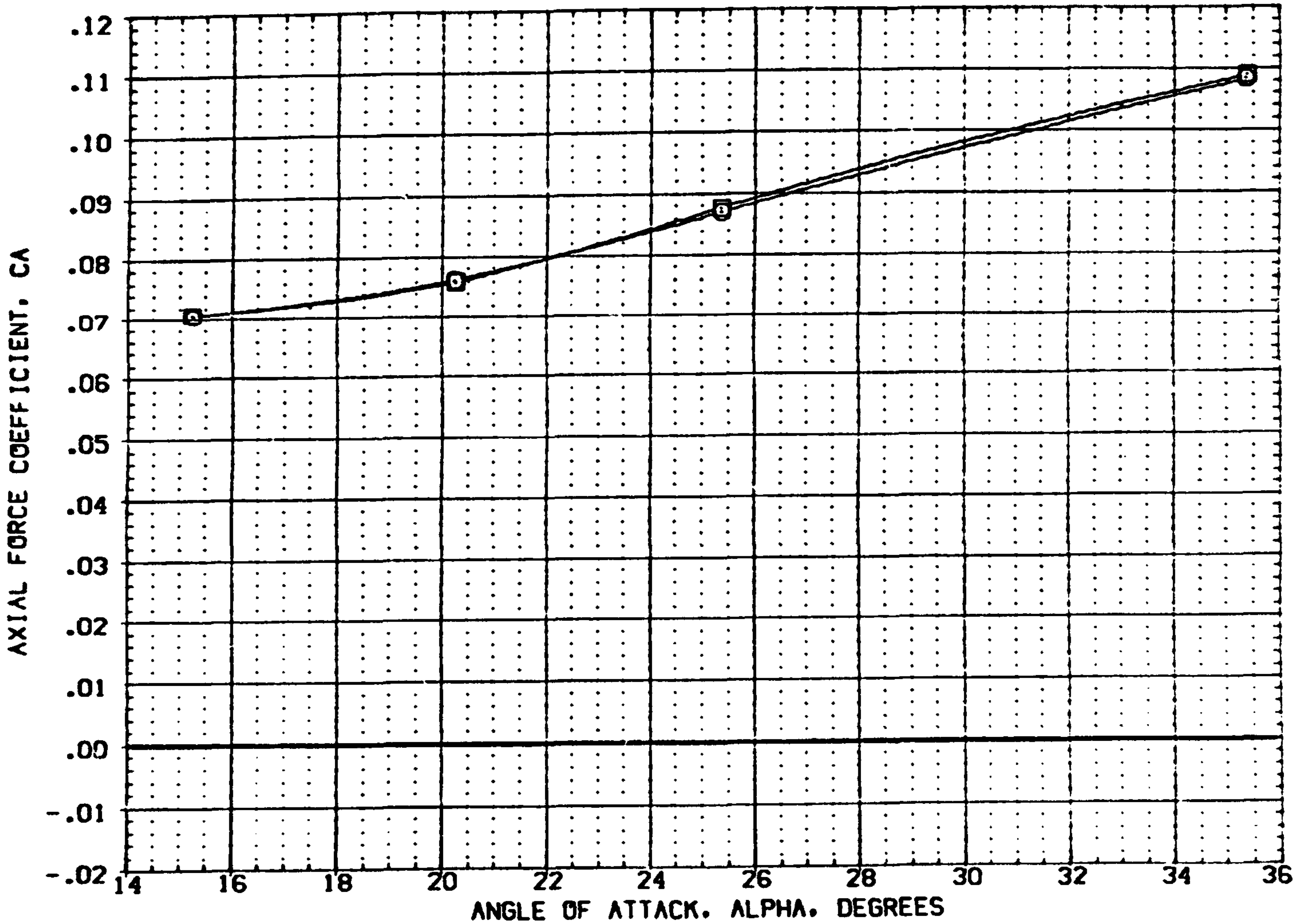

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N23)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	15.000	13.750	40.000	314.000
(XB5F23)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	15.000	13.750	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

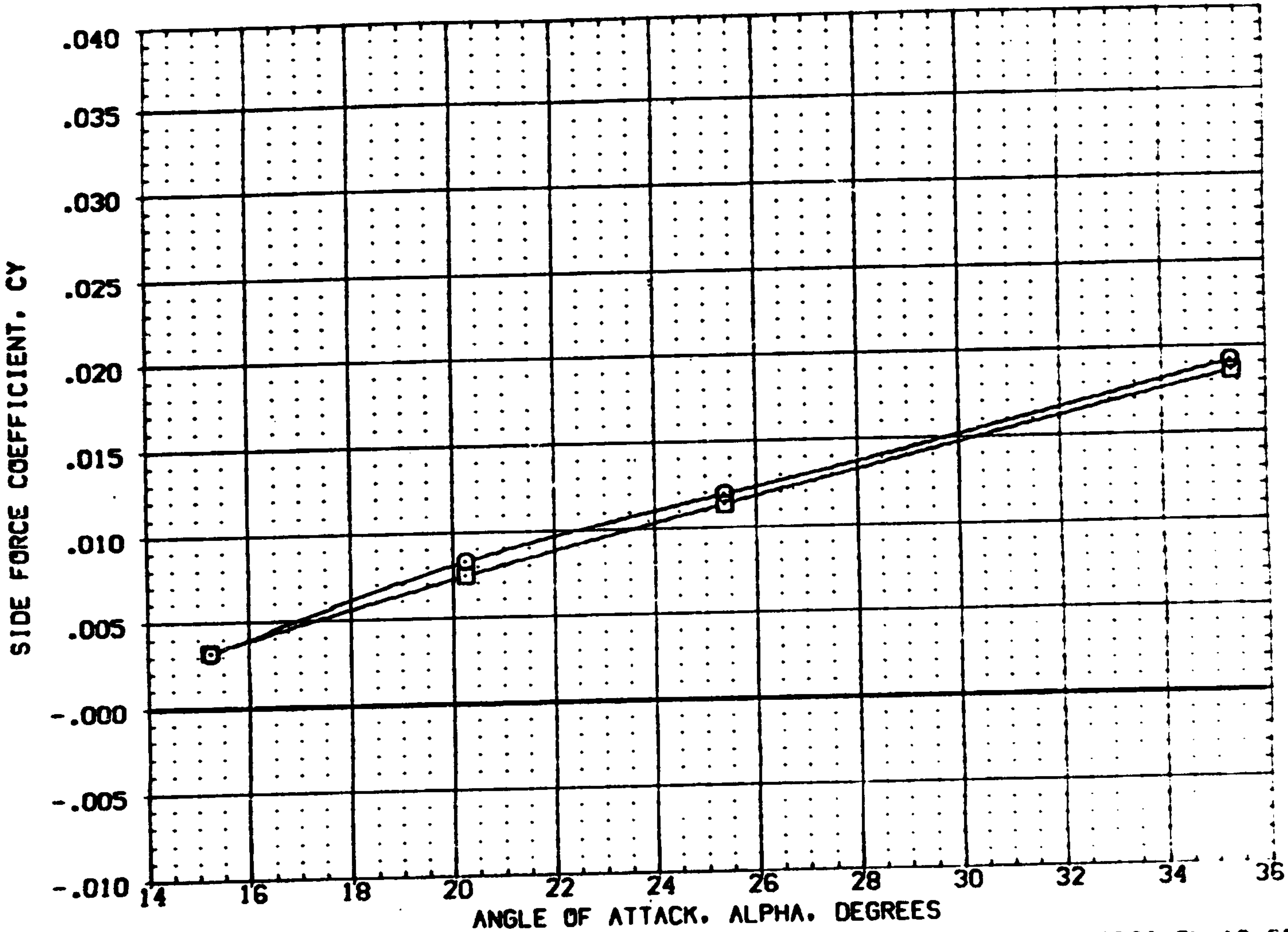

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N23)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	15.000	13.750	40.000	314.000
(XB5F23)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	15.000	13.750	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

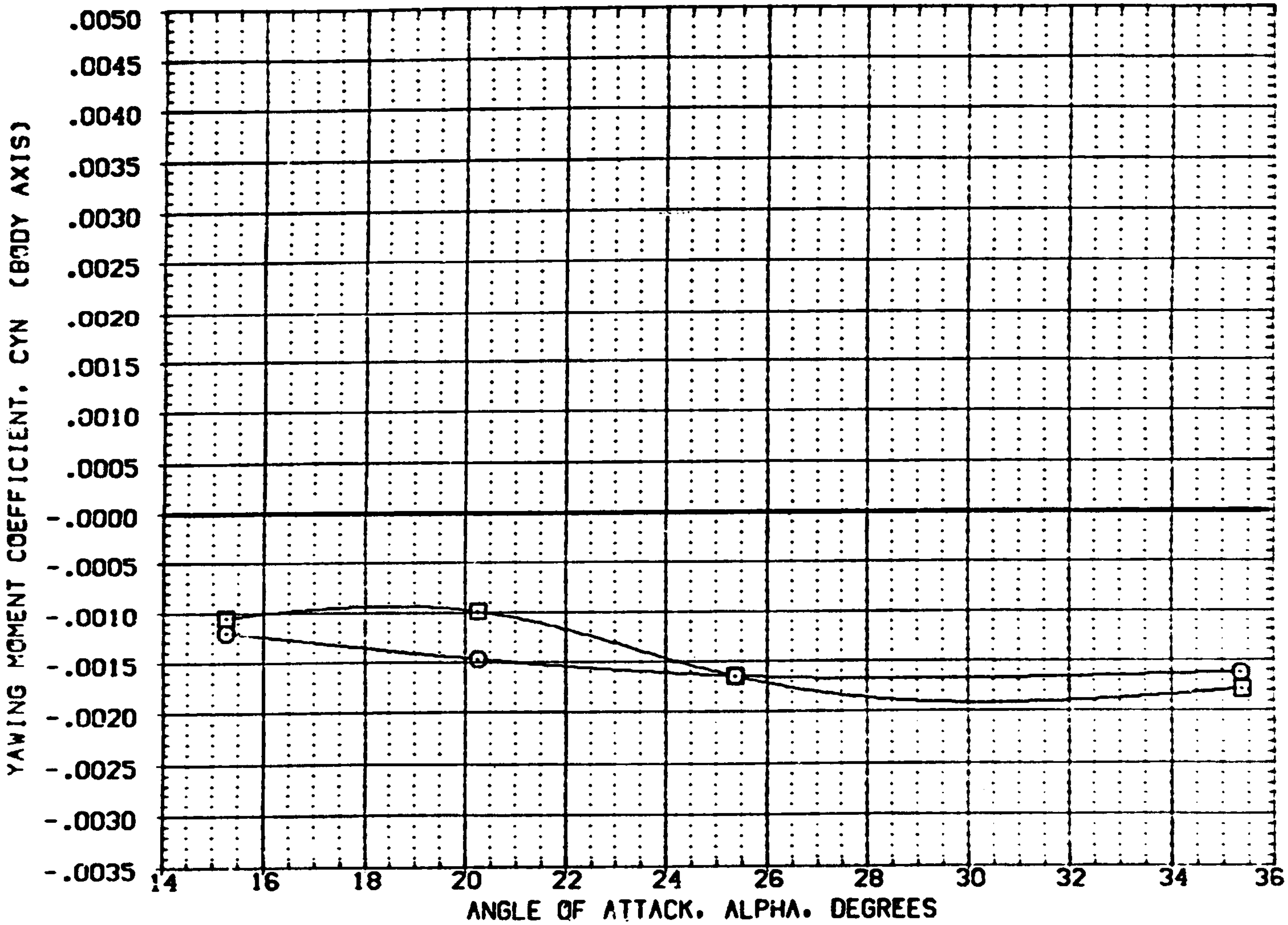

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

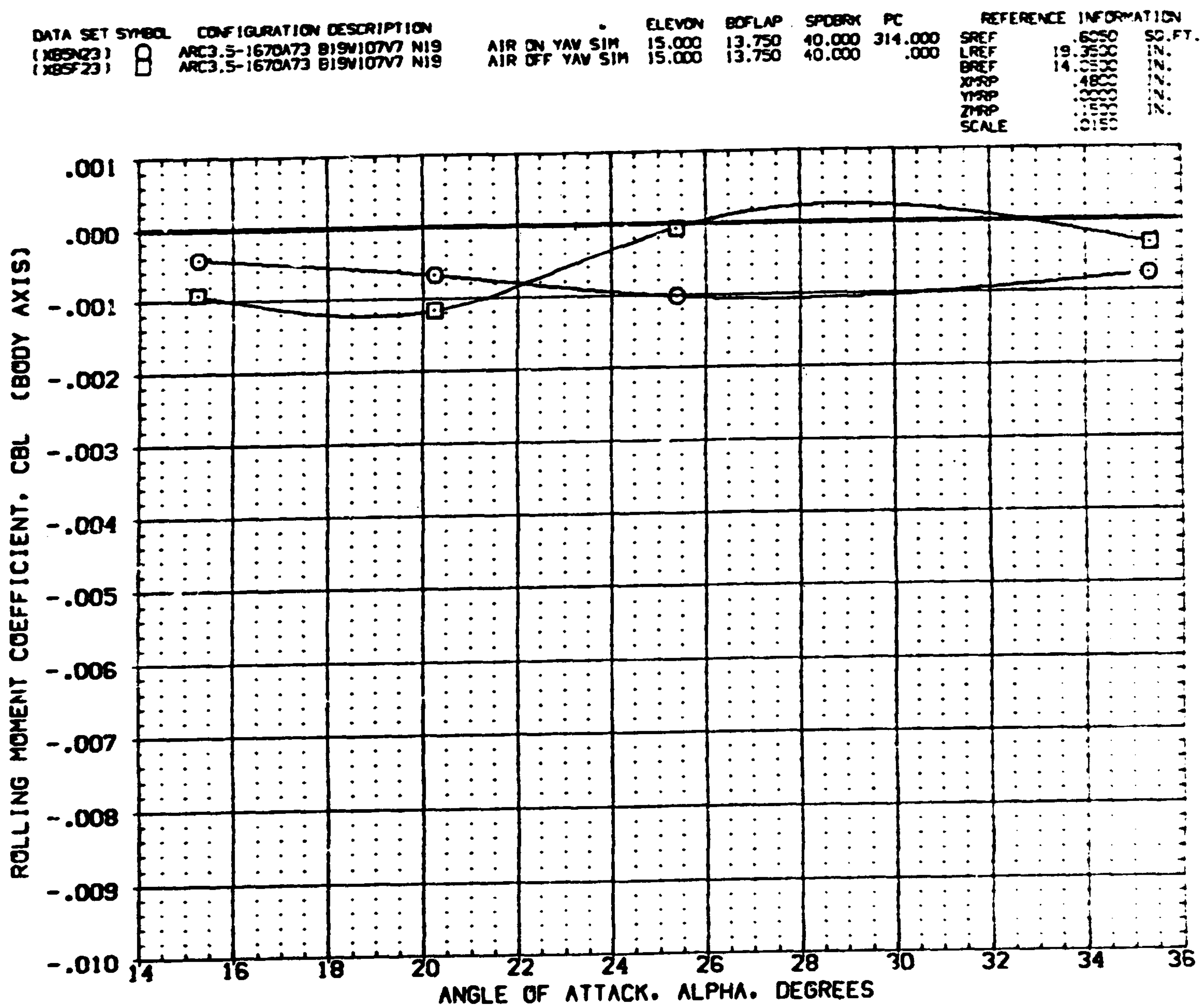

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N24)	○	ARC3.5-1670A73 B19V.07V7 N19	AIR ON YAW SIM	.000	.000	40.000	314.000
(XB5F24)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

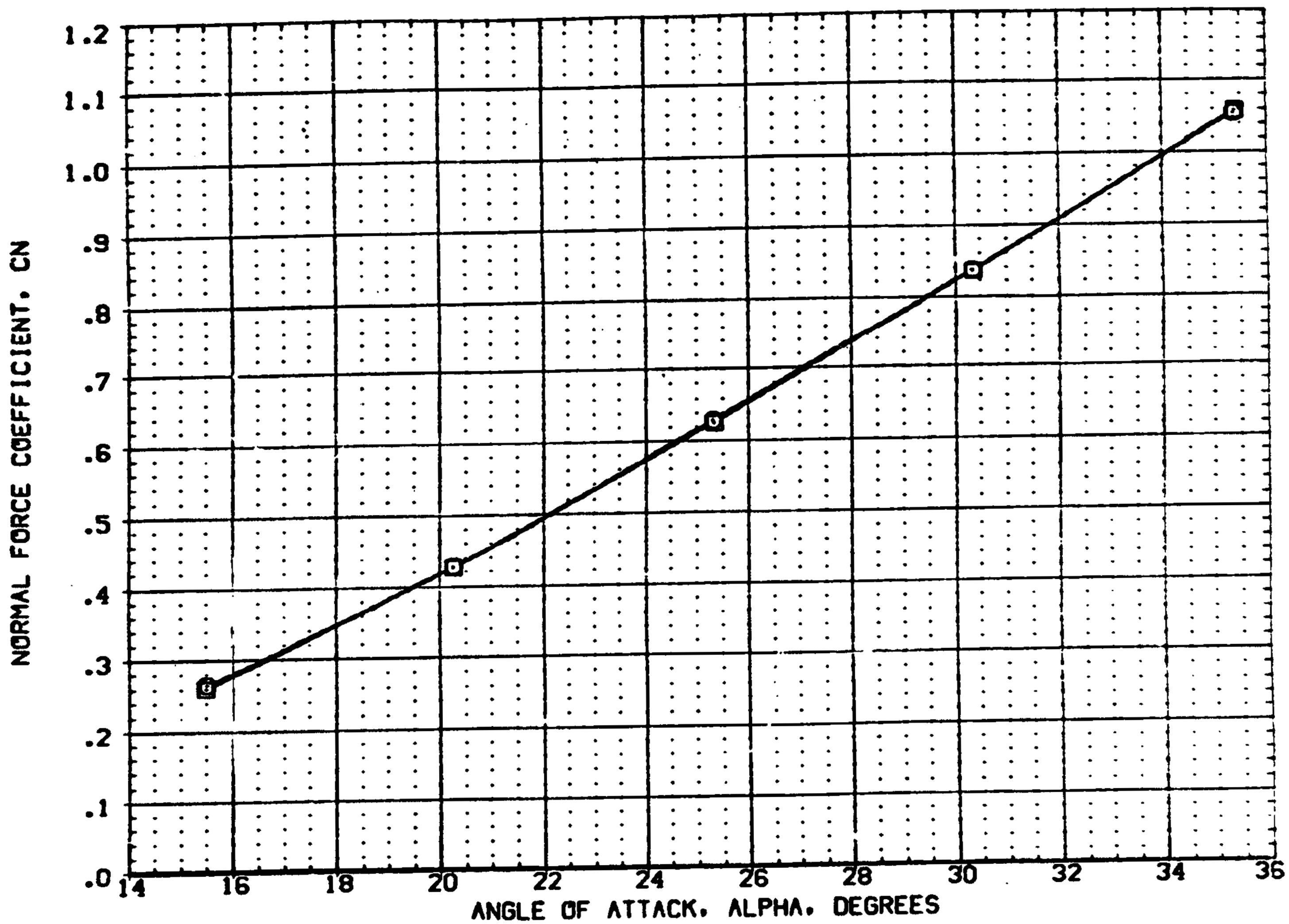

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	SOFLAP	SPDBRK	PC
(XBSN24)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	.000	.000	40.000	314.000
(XBSF24)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

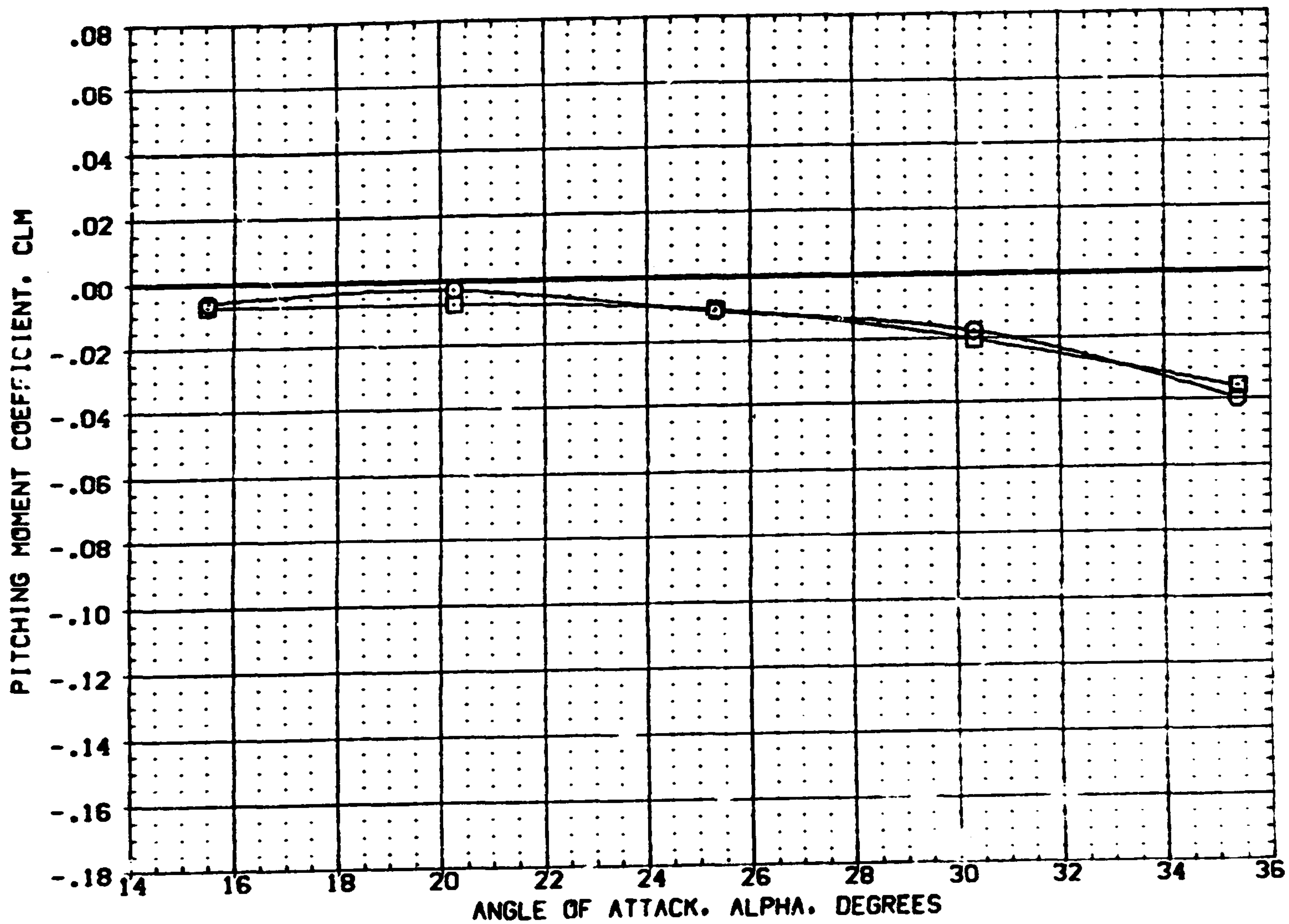

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT, TRUE M=10.29 YAW[illegible]., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N24)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	.000	.000	40.000	314.000
(XB5F24)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	[illegible]	SQ.
LREF	19.3500	IN.
BREF	[illegible]	IN.
XMRP	[illegible]	IN.
YMRP	[illegible]	IN.
ZMRP	.1500	IN
SCALE	.0150	

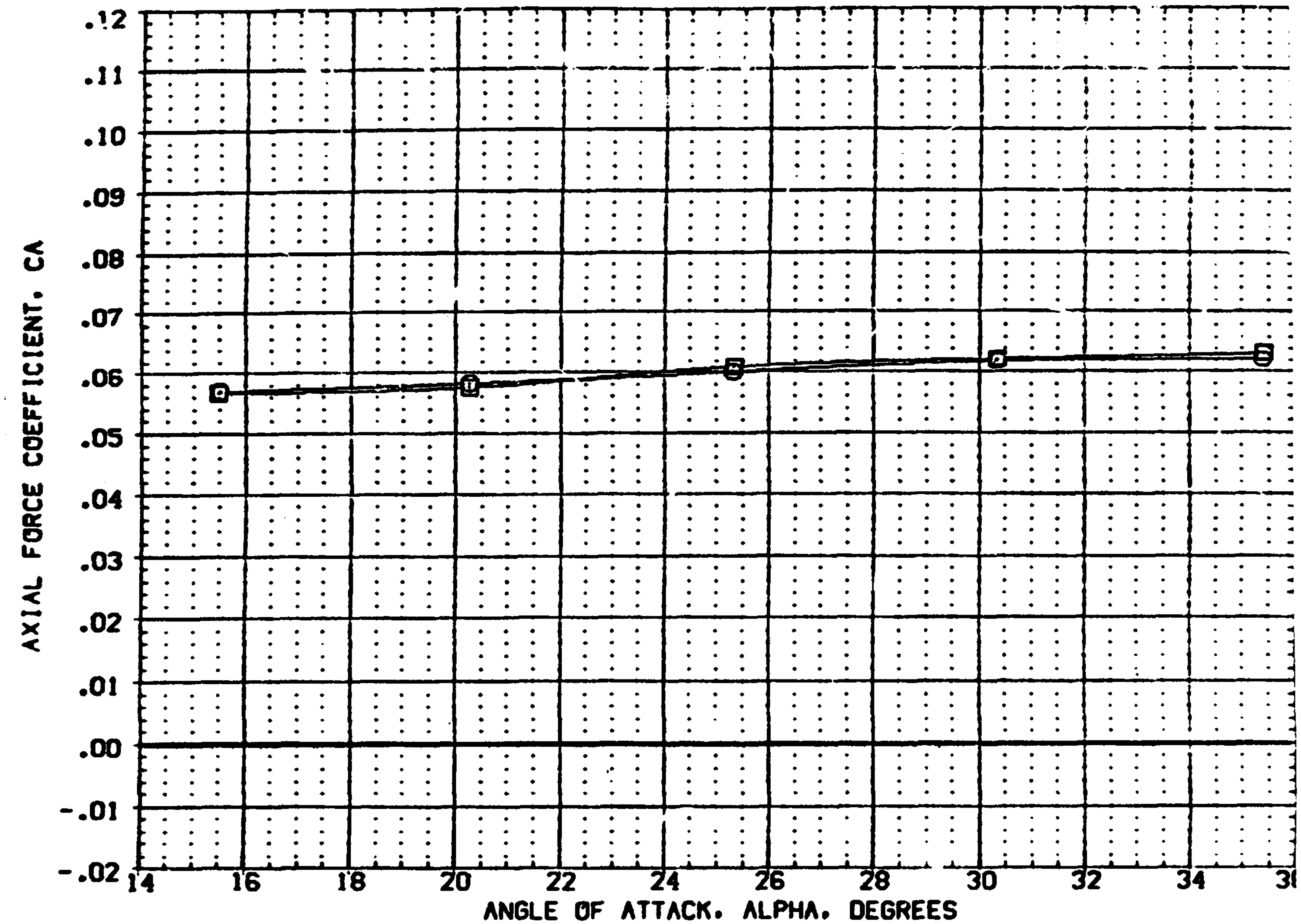

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.6

(A)MACH = 10.29

C3

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N24)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	.000	.000	40.000	314.000
(Y95F24)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

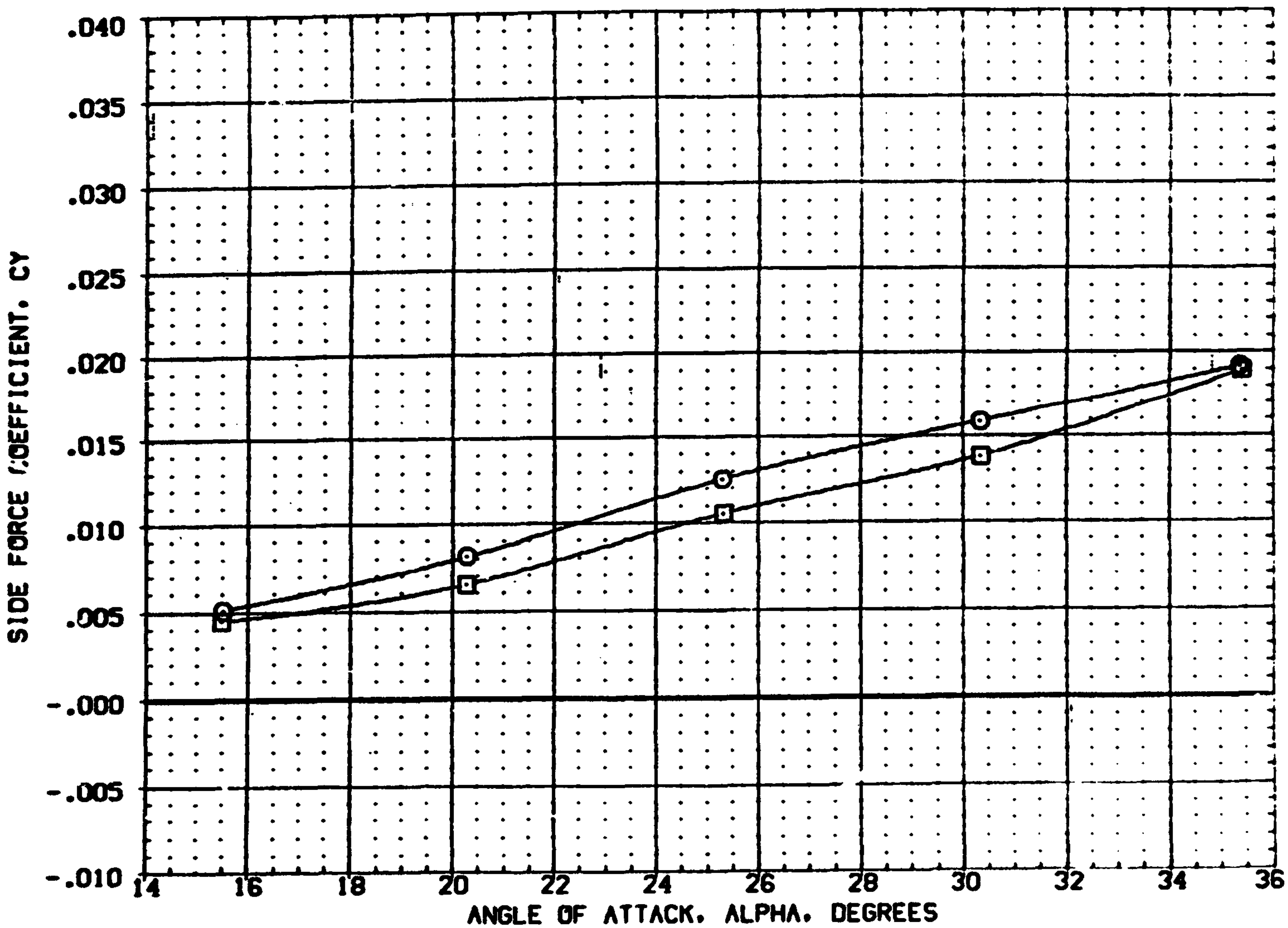

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XB5N24)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	.000	.000	40.000	314.000
(XB5F24)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	.000	.000	40.000	.000

REFERENCE INFORMATION		
SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

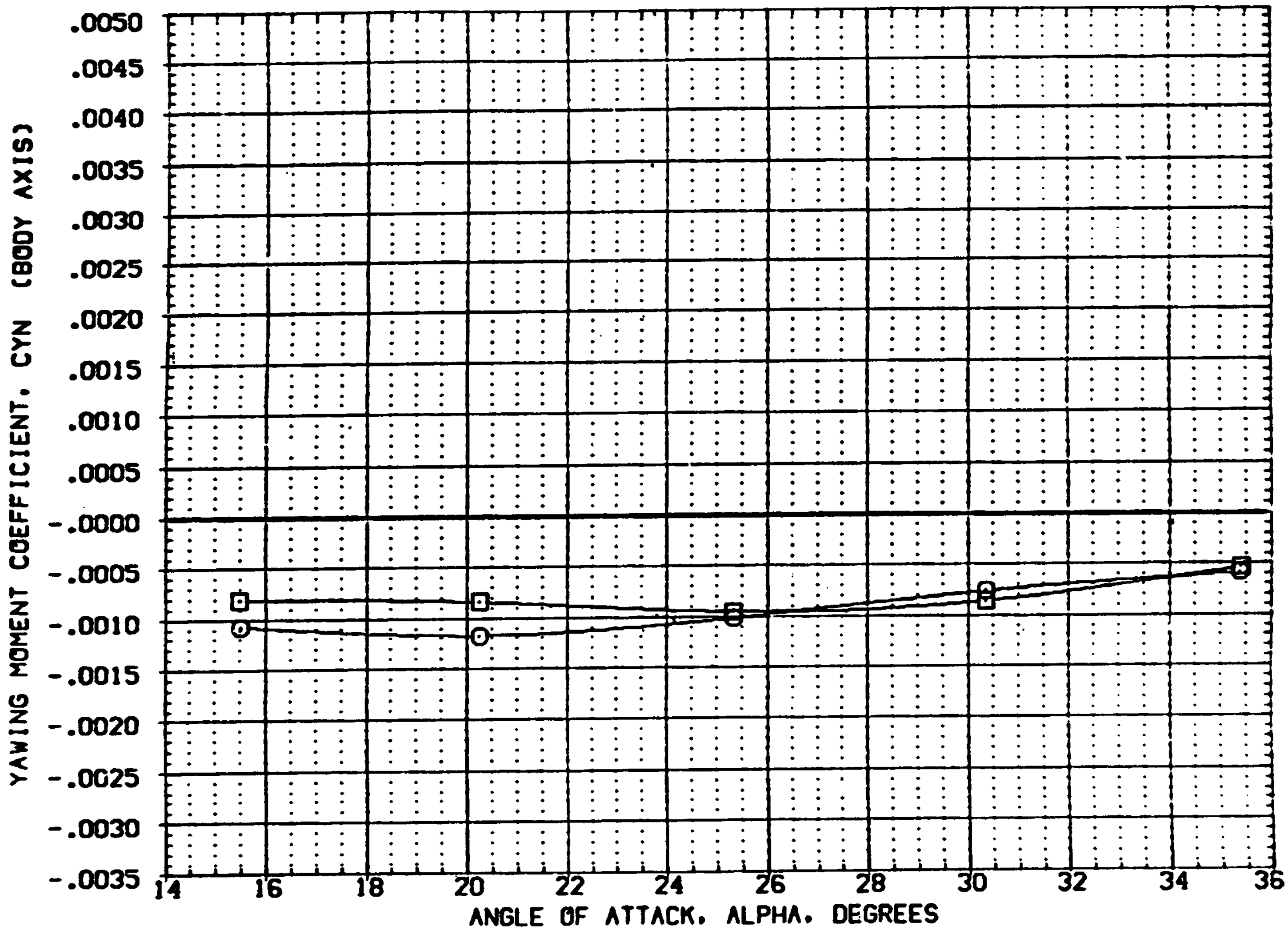

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	BDFLAP	SPDBRK	PC
(XBSN24)	○	ARC3.5-1670A73 B19V107V7 N19	AIR ON YAW SIM	.000	.000	40.000	314.000
(XBSF24)	□	ARC3.5-1670A73 B19V107V7 N19	AIR OFF YAW SIM	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

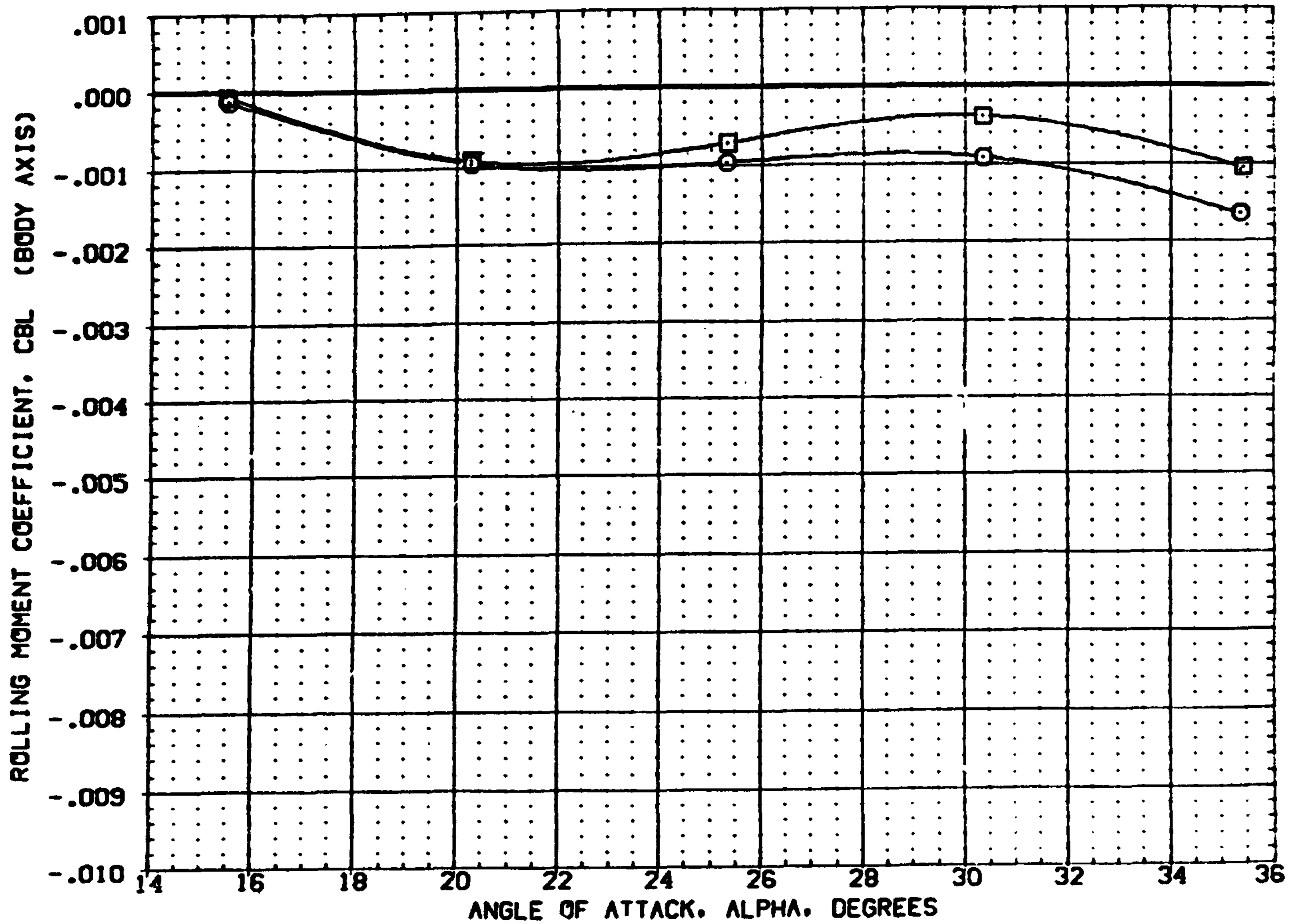

FIG. 8 EFFECTS OF RCS JET FLOWFLD INTERACT. TRUE M=10.29 YAW SIM., EPSILON=10.62

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N25)	○	ARC3.5-1670A73 B19V107V7 N22-N23 AIR ON ROLL ALT	.000	.000	40.000	275.000
(XB5F25)	□	ARC3.5-1670A73 B19V107V7 N22-N23 AIR OFFROLL ALT	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.2500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

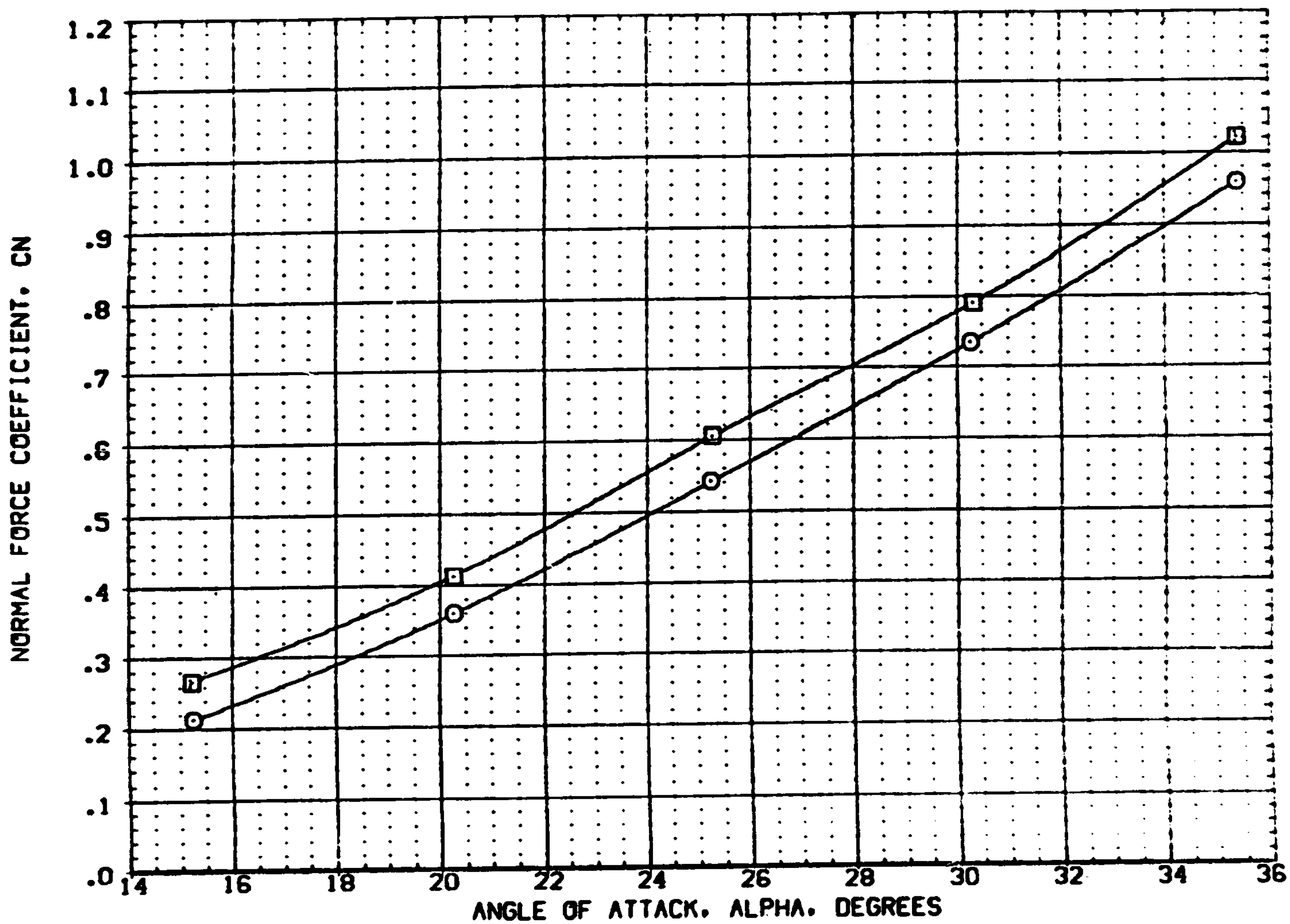

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

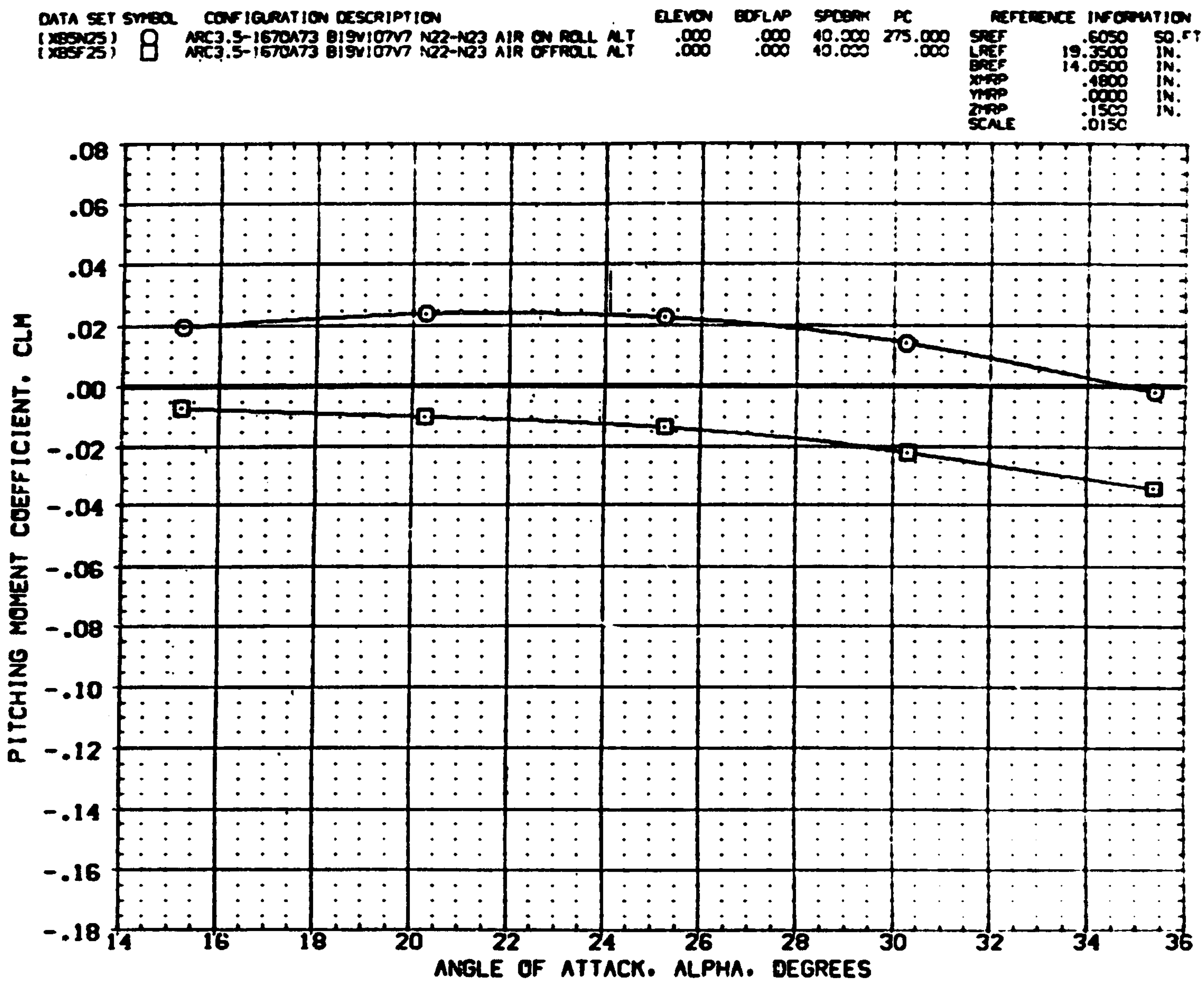

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N25)	○	ARC3.5-1670A73 B19V107V7 N22-N23 AIR ON ROLL ALT	.000	.000	40.000	275.000
(XB5F25)	□	ARC3.5-1670A73 B19V107V7 N22-N23 AIR OFFROLL ALT	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

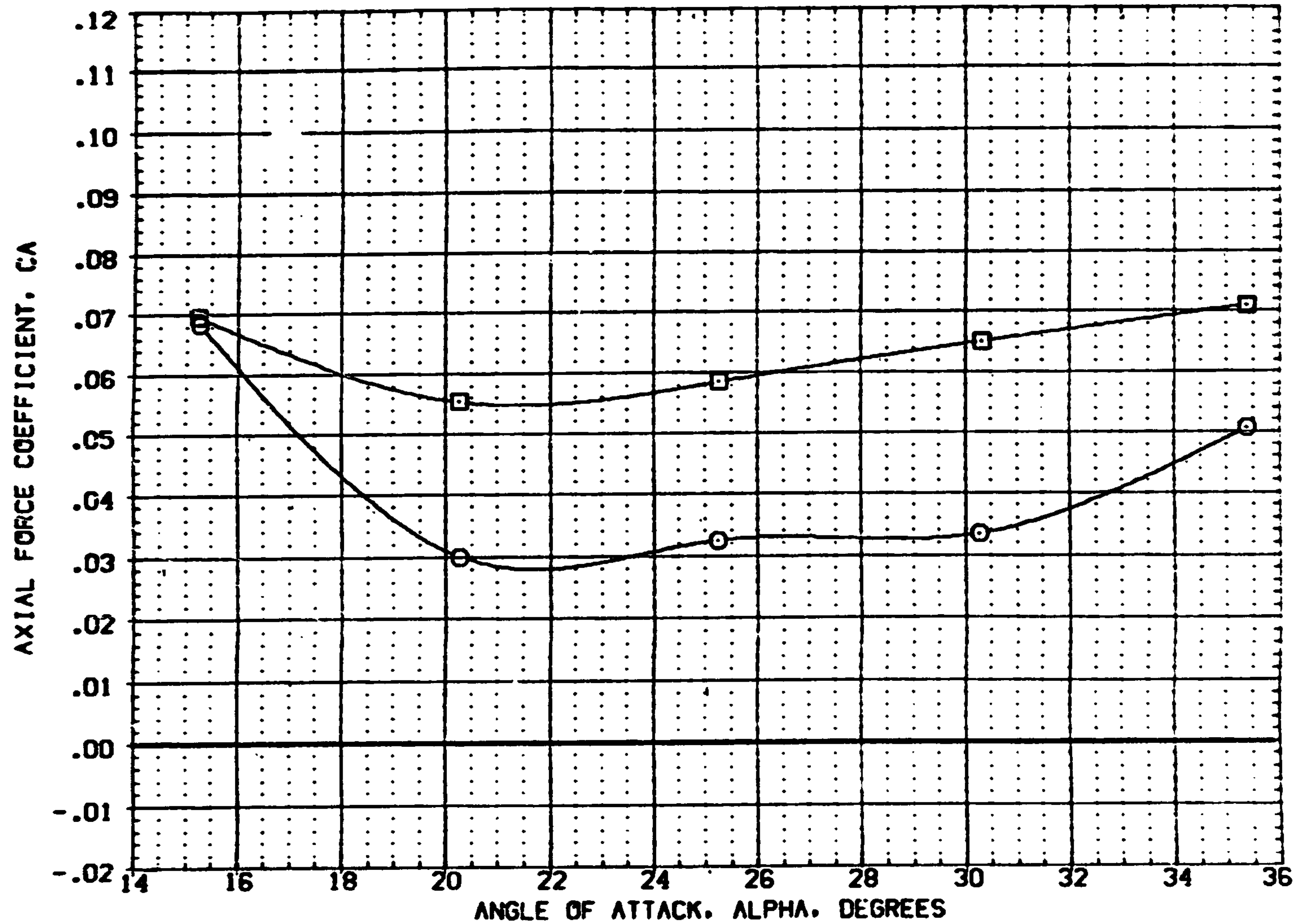

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

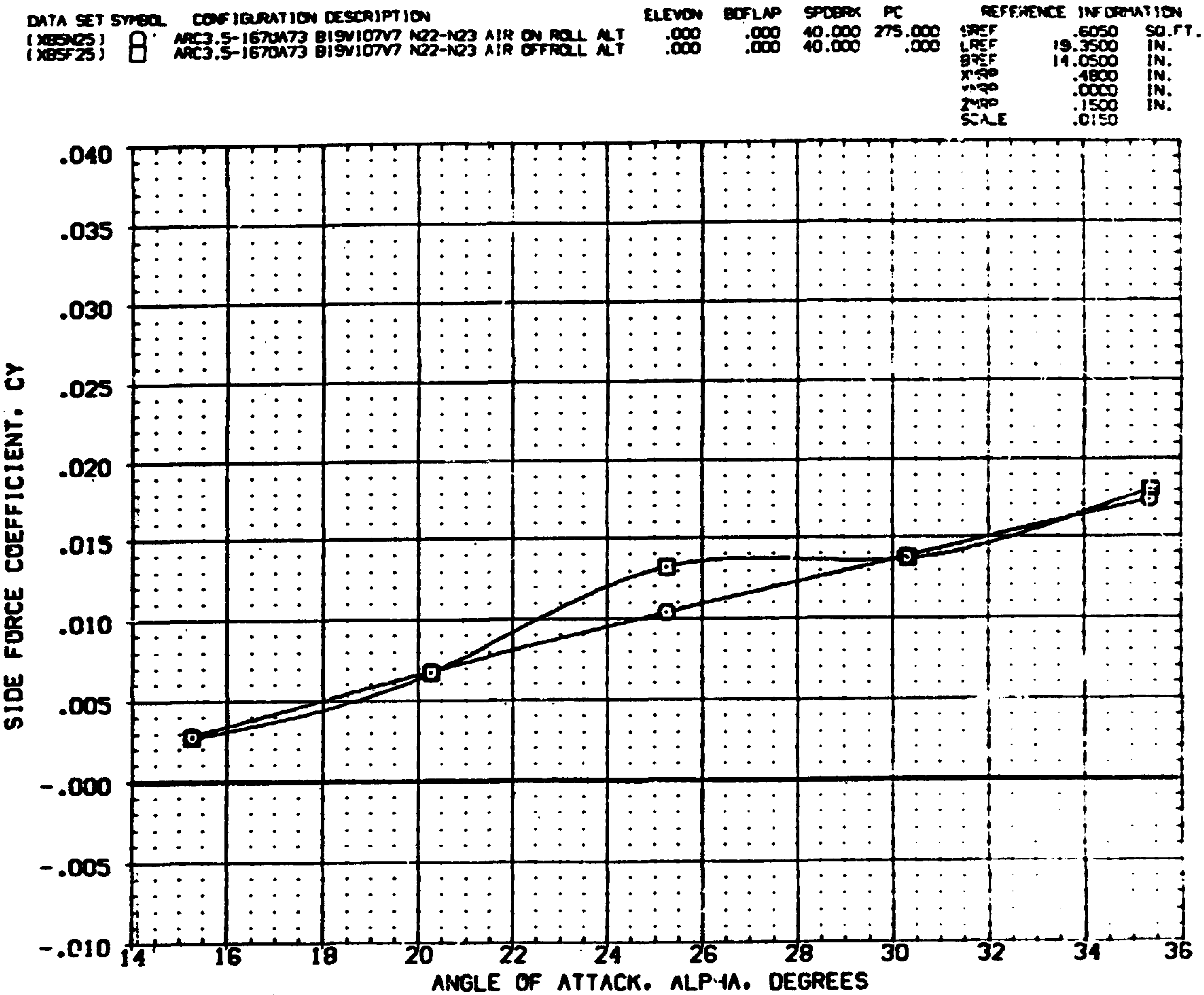

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N25)	○	ARC3.5-1670A73 B19V107V7 N22-N23 AIR ON ROLL ALT	.000	.000	40.000	275.000
(XB5F25)	□	ARC3.5-1670A73 B19V107V7 N22-N23 AIR OFFROLL ALT	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

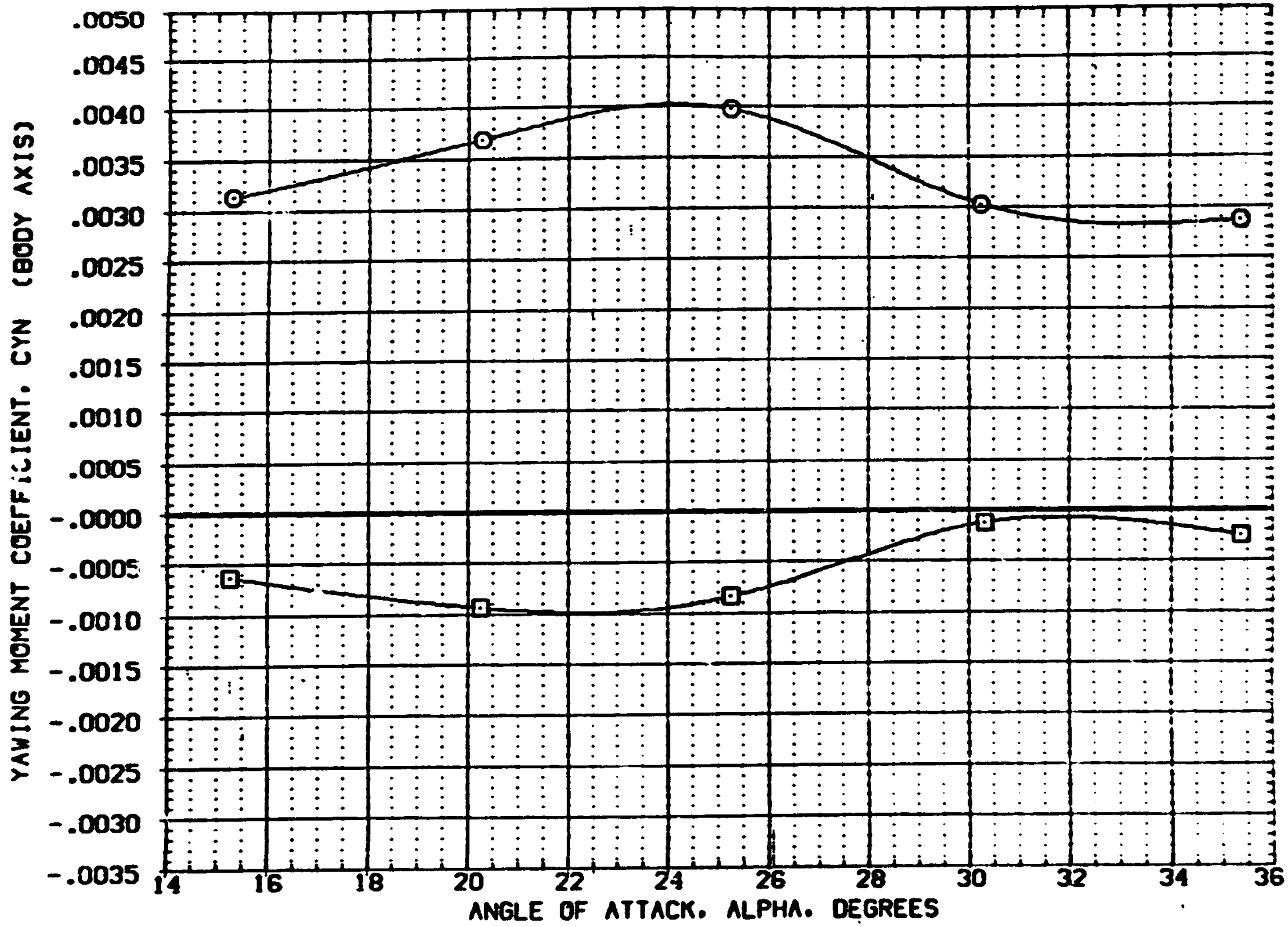

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE. EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XBSN25)	⊡	ARC3.5-1670A73 B19W107V7 N22-N23 AIR ON ROLL ALT	.000	.000	40.000	275.000
(XBSF25)	□	ARC3.5-1670A73 B19W107V7 N22-N23 AIR OFFROLL ALT	.000	.000	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0500	IN.
XMRP	.4800	IN.
YMRP	.0000	IN.
ZMRP	.1500	IN.
SCALE	.0150	

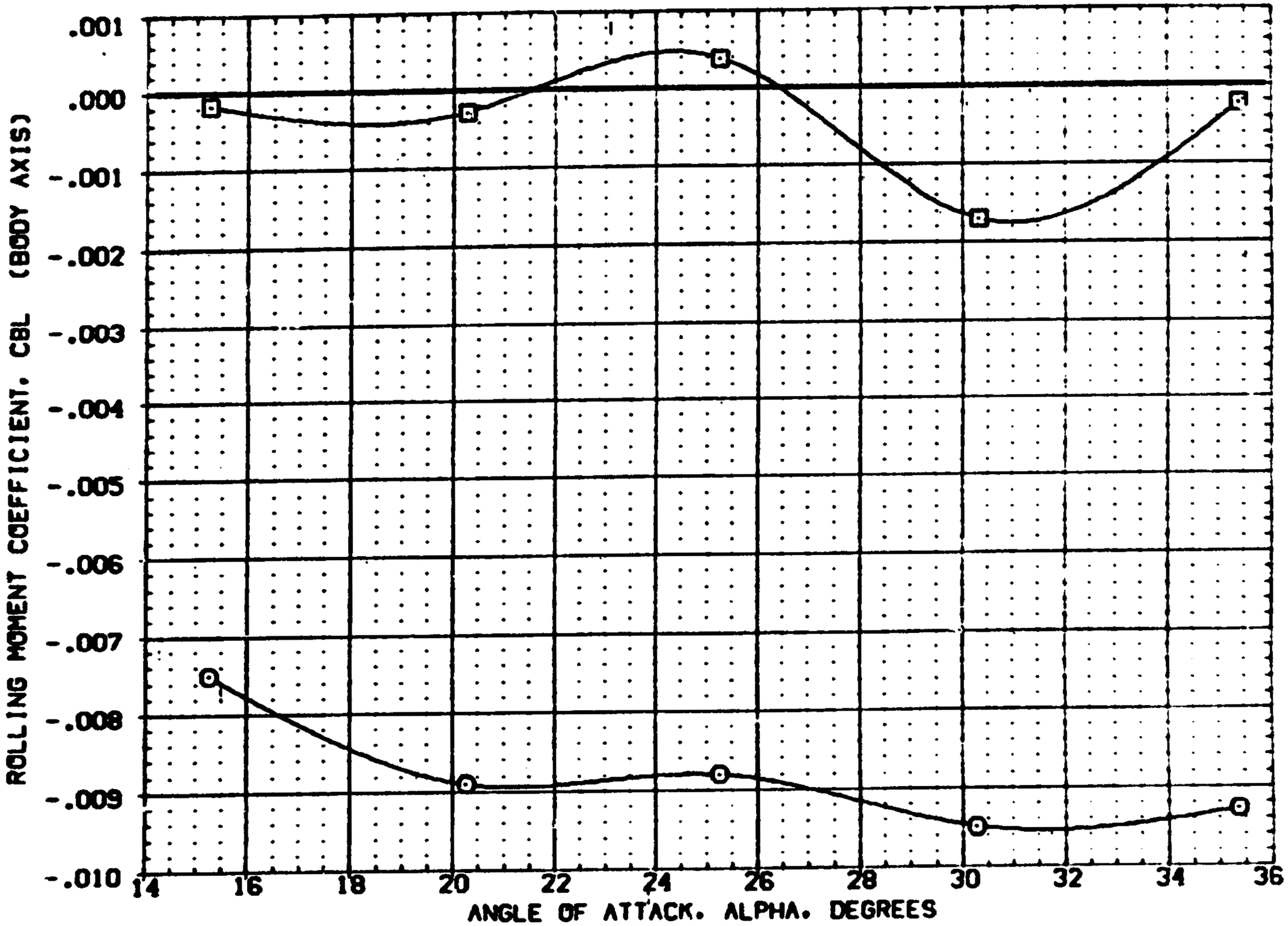

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE. EPSILON=1.159.

(A)MACH = 10.29

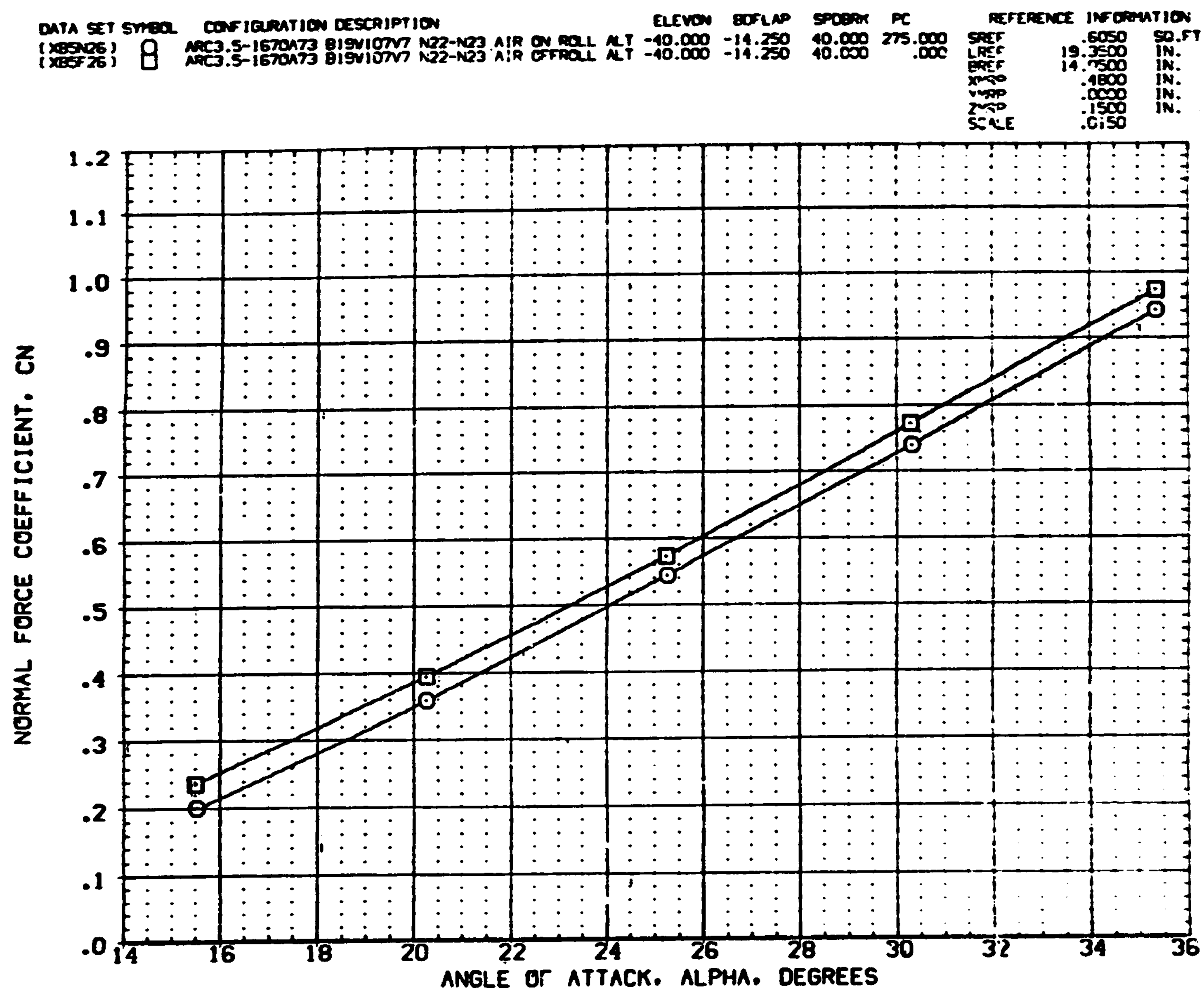

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE. EPSILON=1.159.

(A)MACH = 10.29

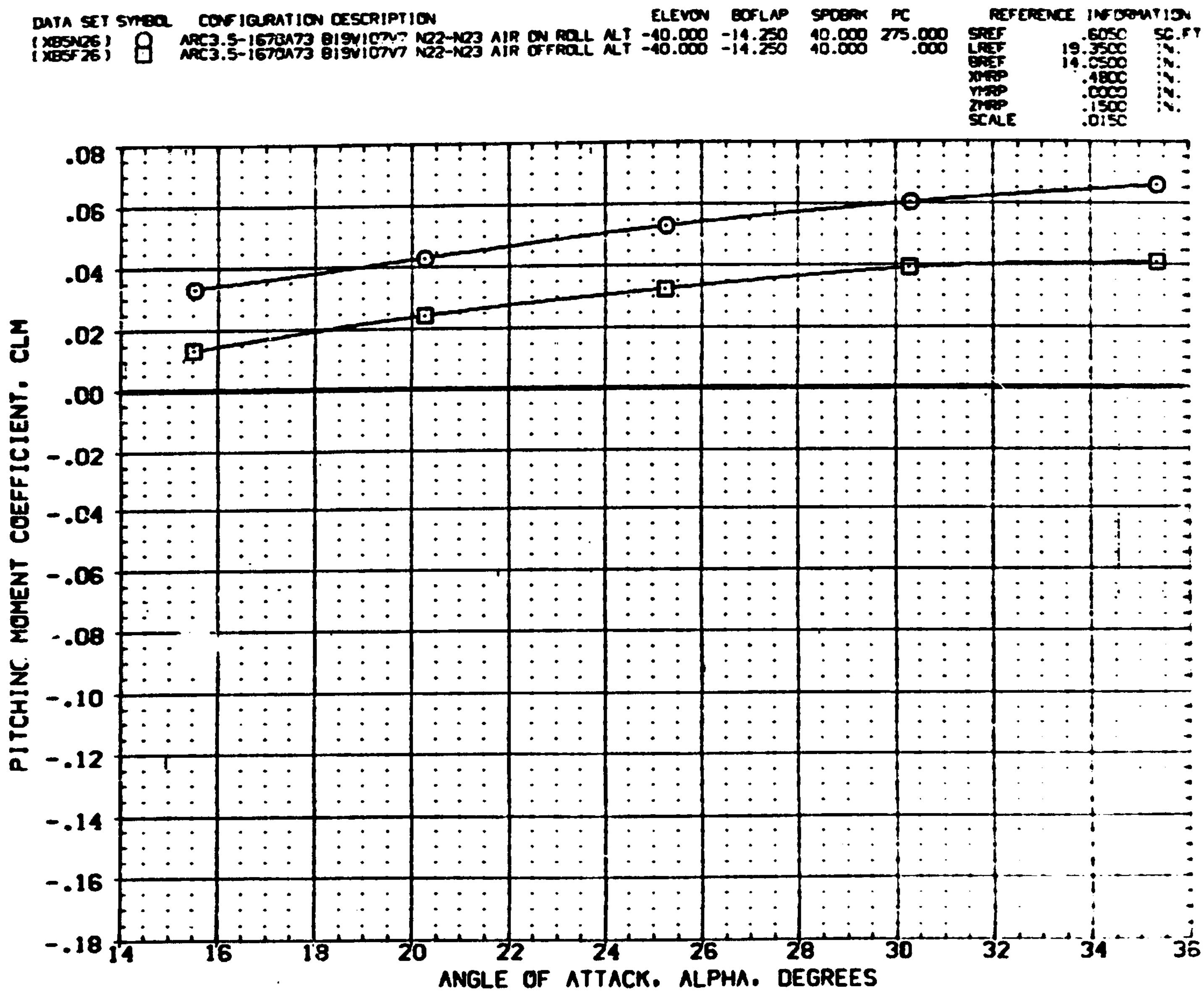

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	BDFLAP	SPDBRK	PC
(XB5N26)	○	ARC3.5-1670A73 B19V107V7 N22-N23 AIR ON ROLL ALT	-40.000	-14.250	40.000	275.000
(XB5F26)	□	ARC3.5-1670A73 B19V107V7 N22-N23 AIR OFFROLL ALT	-40.000	-14.250	40.000	.000

REFERENCE INFORMATION

SREF	.6050	SQ.FT.
LREF	19.3500	IN.
BREF	14.0000	IN.
XMRP	.4900	IN.
YMRP	[illegible]	IN.
ZMRP	[illegible]	IN.
SCALE	.0150	

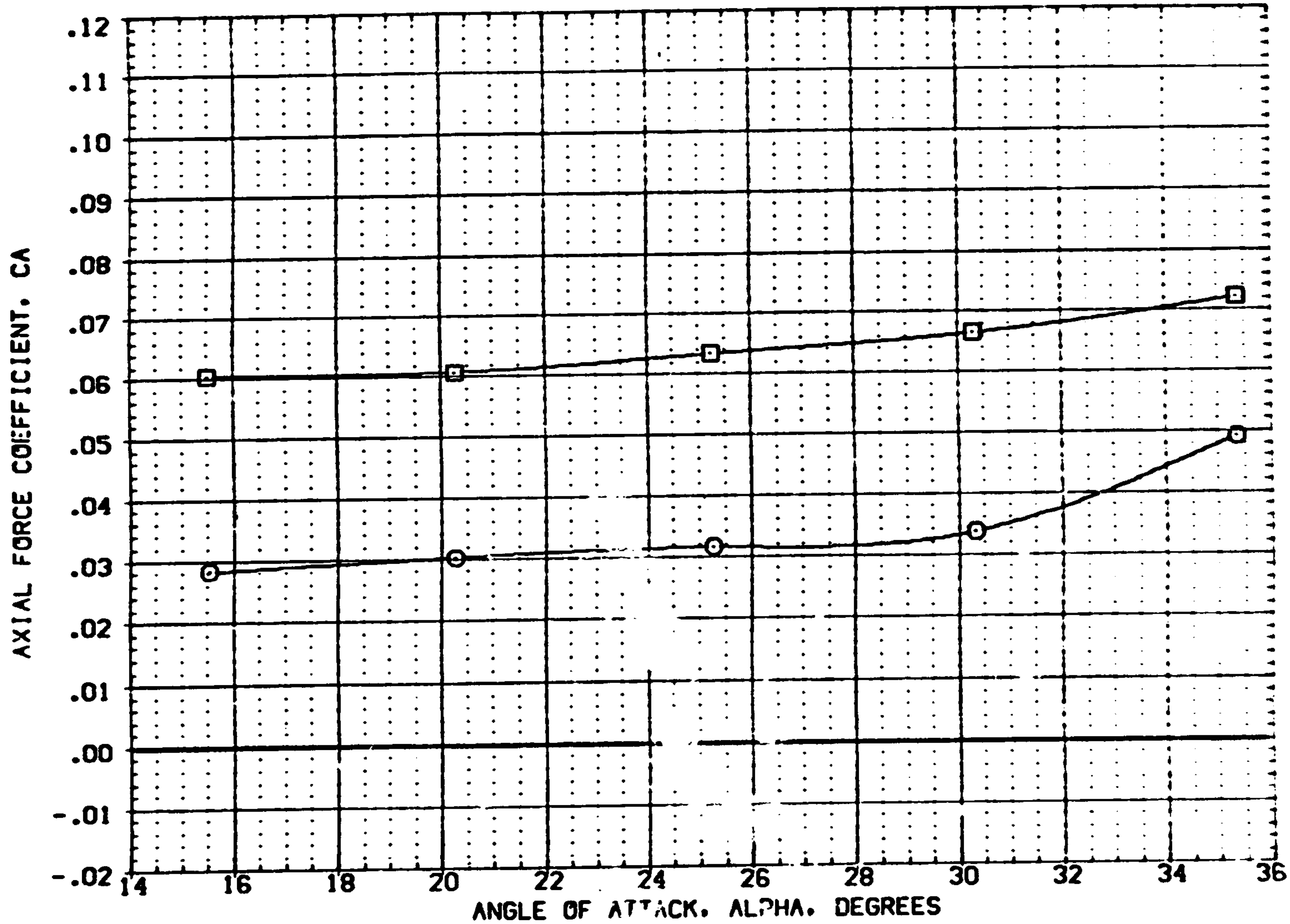

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.
(A)MACH = 10.29

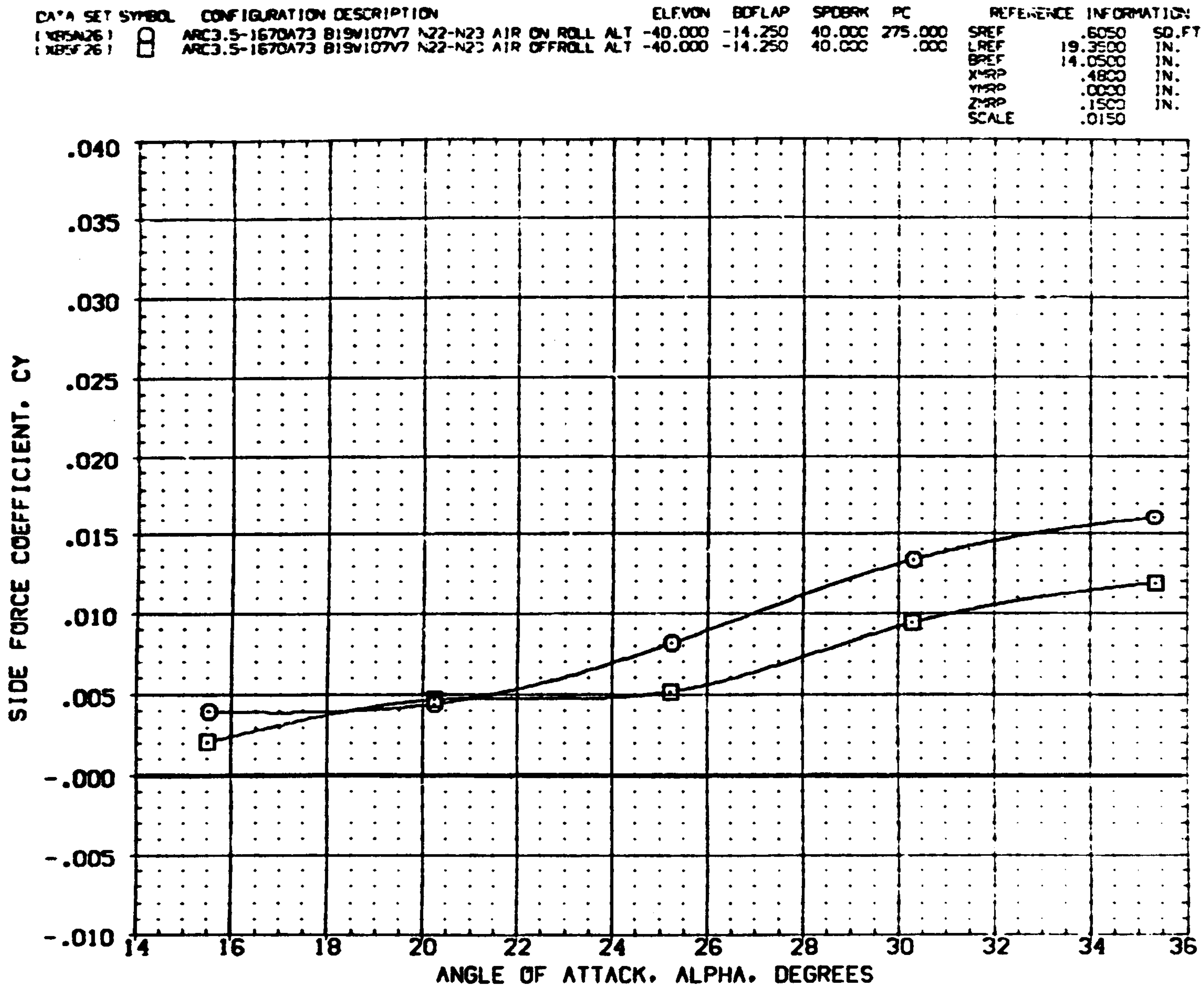

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

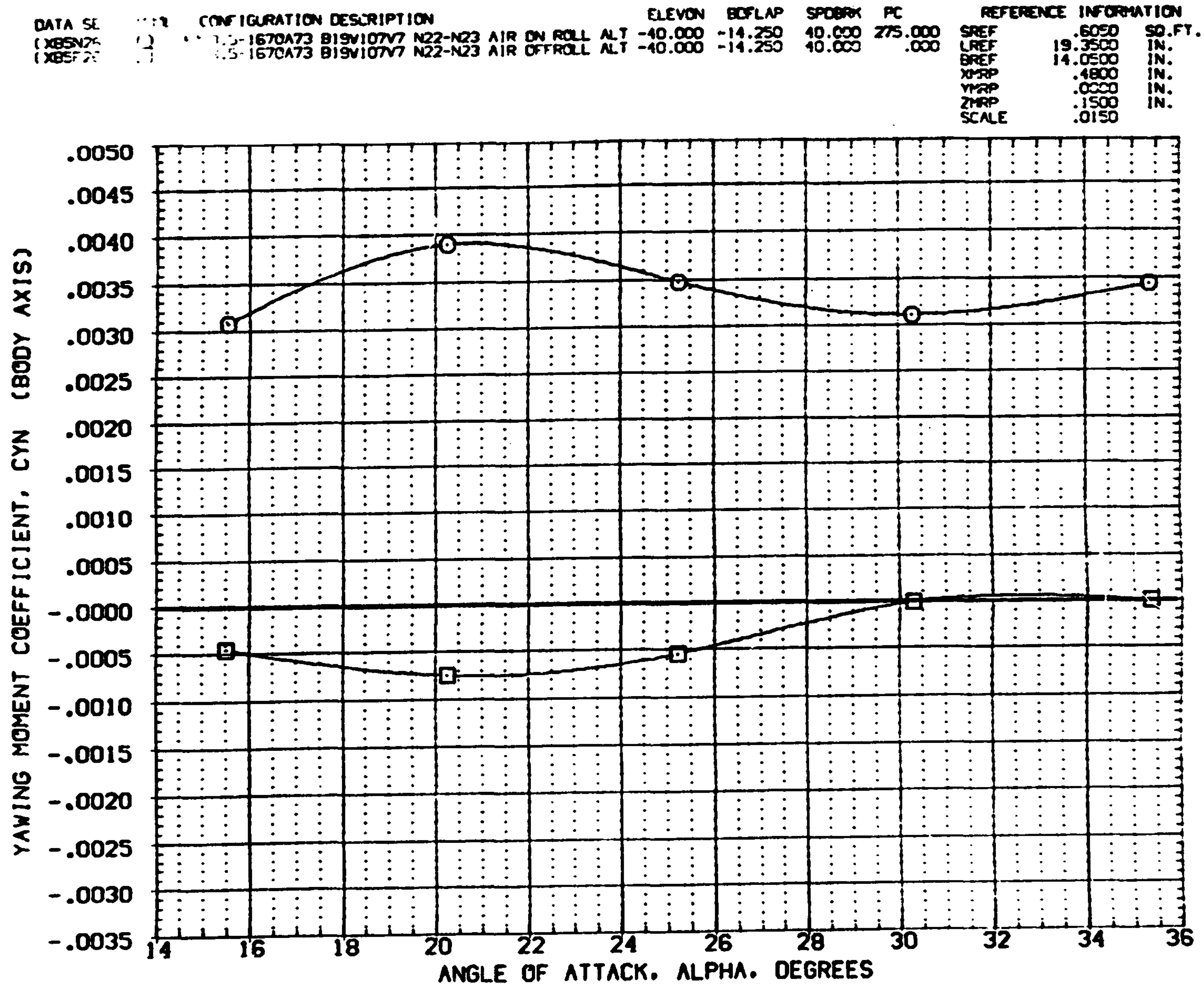

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

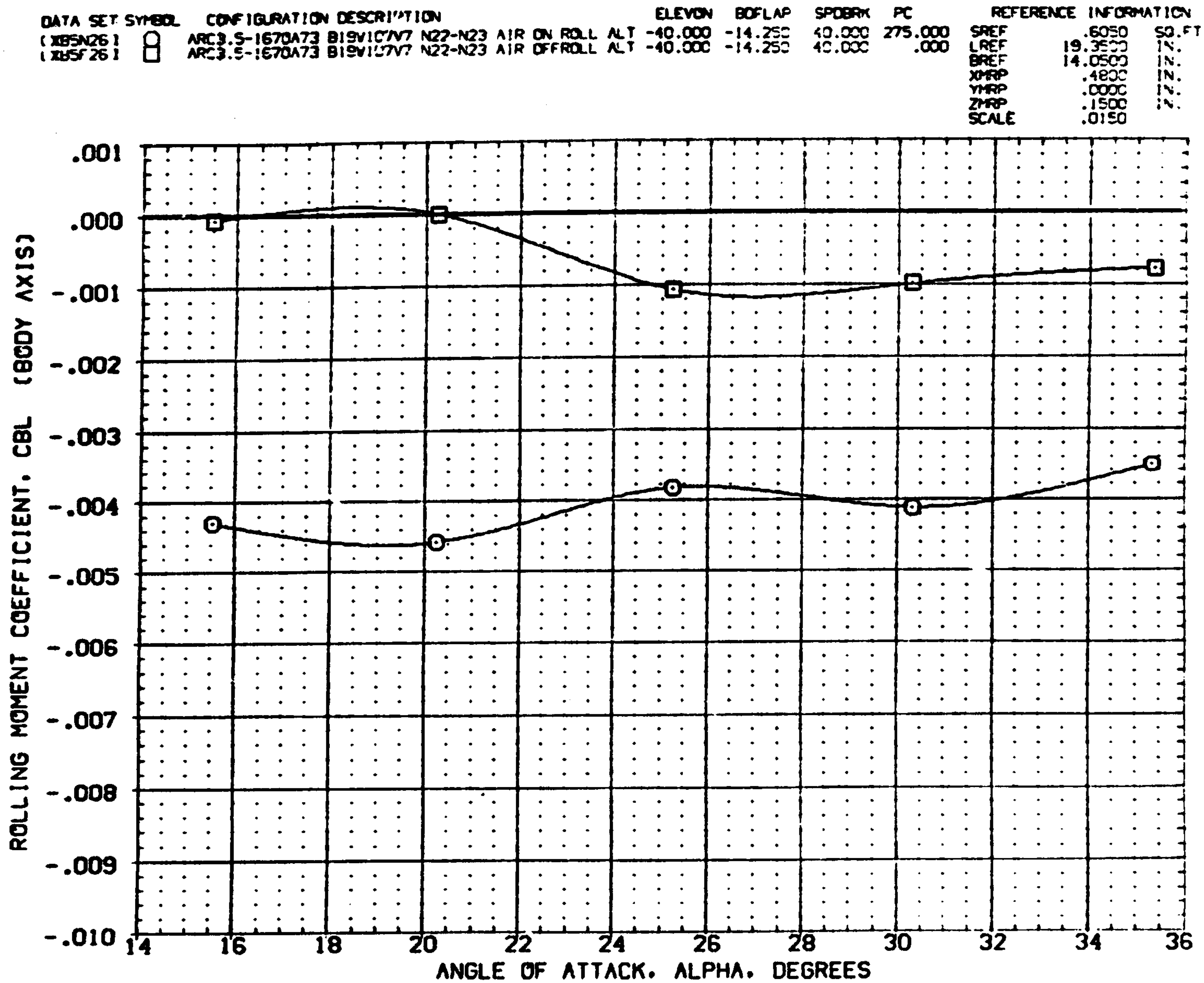

FIG. 9 EFFECTS OF RCS JET FLOWFLD INTERACT. ALT. ROLL MODE, EPSILON=1.159.

(A)MACH = 10.29

APPENDIX

TABULATED SOURCE DATA

Tabulation of plotted data are available on request from Data Management Services

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73)

ARC3.5-167OA73 B19W107V7 N20 AIR OFF YAW (RB5F01) (05 OCT 73)

REFERENCE DATA

SREF =	.6030 SQ.FT.	XMRP =	.4800 IN.		
LREF =	19.3500 IN.	YMRP =	.0000 IN.		
BREF =	14.0500 IN.	ZMRP =	.1500 IN.		
SCALE =	.0150				

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-20.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 7/ 0 RN/L = 1.94 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.220	.26331	.06031	.23824	.12732	.00307	.00715	-.00051	-.00035	1.87119	-.24357
10.290	15.490	.24537	.05642	.22139	.11990	.00547	.00554	-.00072	-.00041	1.84652	.20650
10.290	20.234	.39871	.05723	.35431	.19160	.00786	.01344	-.00078	-.00062	1.64924	.07315
10.290	25.370	.59163	.05985	.50811	.30785	.01205	.01790	-.00055	-.00047	1.65485	-.01020
10.290	30.371	.78713	.06190	.65644	.45643	.01520	.01763	-.00023	-.00062	1.43820	-.04354
10.290	35.328	1.00395	.06279	.78443	.63289	.01855	.01486	-.00005	-.00019	1.23944	-.07688
	GRADIENT	.03760	.00051	.03014	.02260	.00061	.00087	.00004	.00003	-.03785	-.01623

ARC3.5-167OA73 B19W107V7 N20 AIR OFF YAW (RB5F02) (05 OCT 73)

REFERENCE DATA

SREF =	.6030 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	15.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 8/ 0 RN/L = 1.90 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	14.970	.32709	.07256	.29725	.15490	.00282	-.04647	-.00078	-.00067	1.92275	-.28709
10.290	15.452	.31039	.06741	.28111	.14786	.01107	-.04783	-.00070	.00003	1.90117	.12984
10.290	20.251	.49024	.07439	.43420	.23944	.00775	-.06001	-.00161	-.00061	1.81338	.06296
10.290	25.296	.70705	.08401	.60335	.37807	.01165	-.08042	-.00128	-.00068	1.59587	-.07039
10.290	30.323	.93506	.09343	.79997	.55274	.01391	-.10217	-.00113	-.00116	1.37492	-.07039
10.290	35.274	1.16765	.10072	.89511	.75653	.01982	-.12543	-.00104	-.00045	1.18318	-.08706
	GRADIENT	.04290	.00192	.03353	.02748	.00077	-.00405	.00006	-.00005	-.04312	-.02644

ARC3.5-167OA73 B19W107V7 N2O AIR OFF YAW (RB5F03) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 9/ 0 RN/L = 1.91 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.282	.25163	.08251	.22626	.12882	.00075	.01093	-.00043	-.00026	1.76690	-.20184
10.290	15.522	.23285	.09808	.20855	.11924	.00594	.00979	-.00040	-.00004	1.74906	.03309
10.290	20.272	.38866	.05976	.34482	.19107	.00891	.01870	-.00057	-.00011	1.80470	-.00047
10.290	25.334	.57949	.08235	.49708	.30432	.01102	.02324	-.00042	-.00065	1.63343	-.01725
10.290	30.368	.77445	.08496	.63536	.44756	.01320	.02551	-.00001	-.00083	1.41961	-.09081
10.290	35.400	.97777	.08740	.75797	.62135	.01693	.02637	.00011	-.00109	1.21988	-.10115
	GRADIENT	.05790	.00051	.03008	.02237	.00081	.00090	.00003	-.00011	-.03385	-.00332

ARC3.5-167OA73 B19W107V7 N21-N25 AIR OFF ROLL (RB5F07) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	-14.290
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 13/ 0 RN/L = 1.83 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.225	.25409	.08319	.22652	.12788	-.00025	.01412	-.00023	-.00010	1.78982	-.43642
10.290	15.483	.23740	.07080	.21281	.12178	.00079	.01385	-.00038	-.00003	1.74583	.03471
10.290	20.258	.39451	.08044	.34919	.19329	.00312	.02489	-.00033	-.00055	1.80658	.13941
10.290	25.319	.57208	.08237	.49043	.30102	.00575	.03344	-.00023	.00007	1.62921	.13941
10.290	30.391	.77377	.08903	.63487	.44709	.00779	.03805	.00011	-.00027	1.41999	-.13978
10.290	35.390	.97911	.08727	.79825	.62188	.01029	.04175	.00014	-.00031	1.22090	-.38407
	GRADIENT	.03907	.00038	.02790	.02128	.00052	.00173	.00002	.00012	-.03503	.00000

ARC3.5-167OA73 B19W107V7 NE1-NE3 AIR OFF ROLL (RB5FD8) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-20.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1600.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 14/ 0 RN/L = 1.86 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.458	.23625	.05636	.21269	.11729	.00868	.00733	-.00163	-.00033	1.81336	.25545
10.290	25.242	.58433	.08046	.50276	.30386	.02135	.02523	-.00183	.00022	1.65455	-.05864
10.290	30.343	.77813	.06107	.64069	.44580	.02134	.02849	-.00139	-.00118	1.43717	-.25058
10.290	35.390	.88509	.08171	.76734	.62081	.02757	.02925	-.00139	-.00123	1.23604	-.25058
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ARC3.5-167OA73 B19W107V7 NE1-NE3 AIR OFF ROLL (RB5FD9) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	15.000	BDFLAP =	13.750
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1600.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 15/ 0 RN/L = 1.82 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.194	.34336	.07401	.31197	.16142	.00242	-.05636	-.00105	-.00035	1.93266	-.39030
10.290	15.453	.32491	.08998	.29452	.15402	.00554	-.06074	-.00116	-.00040	1.91222	.22053
10.290	20.239	.51413	.07922	.45498	.25216	.00808	-.08039	-.00159	-.00049	1.80420	.13326
10.290	25.230	.73174	.08039	.62341	.39367	.01180	-.10742	-.00177	-.00005	1.58357	.06346
10.290	30.254	.98849	.10302	.78468	.57695	.01510	-.13600	-.00154	.00007	1.36004	-.25068
10.290	35.396	1.20472	.11223	.91705	.78928	.01792	-.16470	-.00100	-.00138	1.16187	-.25068
	GRADIENT	.04360	.00224	.03374	.02835	.00110	-.00542	-.00004	.00009	-.04420	-.01399

ARC3.5-167OA73 B19W107V7 NE1-NE3 AIR OFF ROLL (RB5F10) (05 OCT 73)

REFERENCE DATA				PARAMETRIC DATA			
SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.	BETA =	.000	PC =	.000
LREF =	19.3500 IN.	YMRP =	.0000 IN.	ELEVON =	.000	BDFLAP =	.000
BREF =	14.0500 IN.	ZMRP =	.1500 IN.	SPDBRK =	40.000	Q PSF =	350.000
SCALE =	.0150			PT PSI =	1800.000	TT DEG =	2000.000
				RE/L =	1.720	EPSLON =	1.159

RUN NO. 16/ 0 RN/L = 1.81 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.190	.28115	.08024	.25852	.13184	.00204	-.00549	-.00086	-.00037	1.93813	-.29965
10.793	15.442	.28055	.05708	.23395	.12440	.00504	-.00524	-.00103	-.00002	1.89665	.27646
10.290	20.298	.42904	.05840	.38290	.20366	.00756	-.00447	-.00102	-.00091	1.87828	.11934
10.290	25.252	.62605	.08036	.54219	.32268	.01226	-.00773	-.00085	-.00056	1.69028	-.02033
15.810	30.279	.83013	.08232	.69237	.47641	.01461	-.01951	-.00090	-.00143	1.45331	-.17745
10.290	35.304	1.07046	.08419	.83556	.67219	.01805	-.03323	-.00008	-.00192	1.24305	-.24728
	GRADIENT	.03904	.00039	.03202	.02388	.00095	-.00085	.00001	.00007	-.03979	-.02807

ARC3.5-167OA73 B19W107V7 NEO AIR OFF YAW (RB5F11) (05 OCT 73)

REFERENCE DATA				PARAMETRIC DATA			
SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.	BETA =	.000	PC =	.000
LREF =	19.3500 IN.	YMRP =	.0000 IN.	ELEVON =	.000	BDFLAP =	.000
BREF =	14.0500 IN.	ZMRP =	.1500 IN.	SPDBRK =	40.000	Q PSF =	350.000
SCALE =	.0150			PT PSI =	1800.000	TT DEG =	2000.000
				RE/L =	1.720	EPSLON =	1.159

RUN NO. 17/ 0 RN/L = 1.57 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.184	.28407	.05828	.25942	.12872	.00336	-.00534	-.00077	-.00046	2.01532	-.43589
10.290	15.498	.28325	.05510	.23904	.12327	.00344	-.00740	-.00072	-.00041	1.93915	.19270
10.290	20.298	.43258	.05746	.38932	.20366	.00846	-.00435	-.00106	-.00016	1.89490	.03580
10.290	25.330	.62916	.08000	.54300	.32340	.01360	-.00781	-.00110	-.00027	1.67903	-.22623
10.290	30.348	.84235	.08215	.69553	.47923	.01829	-.02173	-.00063	-.00132	1.45135	-.22623
10.290	35.399	1.07071	.08430	.83600	.67206	.01953	-.03521	-.00038	-.00172	1.24394	-.22623
	GRADIENT	.03874	.00050	.03095	.02360	.00101	-.00060	-.00001	-.00002	-.04254	-.05160

ARC3.5-167OA73 B19W107V7 N21   AIR OFFPITCH DN   (RB5F12) (05 OCT 73)

REFERENCE DAT.

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 18/ 0   RN/L = 1.55   GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.116	.28065	.05719	.25603	.12639	.00173	-.00468	-.00095	-.00019	1.99411	-.31871
10.290	15.379	.08768	5.33201	-1.32953	5.16434	1.61065	-.14565	-.15133	.04619	-.25744	1.75879
10.290	20.253	.42966	.05898	.38267	.20407	.00936	-.00330	-.00090	-.00035	1.87523	.11774
10.290	25.312	.63584	.06129	.54859	.32726	.01252	-.01156	-.00091	-.00061	1.67630	-.10921
10.290	30.294	.84394	.06762	.69458	.48410	.01500	-.01784	-.00057	-.00108	1.43479	-.17905
10.290	35.371	1.07271	.06454	.83734	.67359	.01600	-.03464	-.00031	-.00061	1.24311	-.24888
	GRADIENT	.04075	.00046	.03279	.02435	.00062	-.00163	-.00000	-.00005	-.03932	-.04486

ARC3.5-167OA73 B19W107V7 N21   AIR OFFPITCH DN   (RB5F13) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	15.000	BDFLAP =	13.750
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 19/ 0   RN/L = 1.88   GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.321	1.08098	.35253	.95911	.62808	.16273	-.08172	-.08406	.07651	1.52705	3.79689
10.290	20.243	.30807	.08542	.45900	.23752	.00936	-.07952	-.00168	-.00039	1.91565	4.12843
10.290	25.260	.72895	.07228	.62840	.37643	.01293	-.10865	-.00167	-.00076	1.66936	4.11098
10.290	30.259	.98104	.07906	.79025	.55259	.01599	-.13677	-.00132	-.00154	1.43010	4.11098
10.290	35.302	1.19857	.08087	.93144	.75863	.02035	-.16398	-.00148	-.00042	1.22780	3.93648
	GRADIENT	.04383	.00137	.03456	.02788	.00071	-.00541	-.00000	-.00008	-.04909	-.00348

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73) (RB5F14) (05 OCT 73)

ARC3.5-167OA73 B19W107V7 N21 AIR OFFPITCH ON

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = .000
ELEVON = -20.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 20/ 0 RN/L = 1.92 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.286	.28037	.08336	.22918	.14905	.00233	.00851	-.00071	-.00034	1.53759	3.79952
10.290	15.492	.23712	.05950	.21261	.12067	.00524	.00718	-.00064	-.00052	1.76196	4.25051
10.290	20.251	.39716	.05719	.35281	.19112	.00848	.01986	-.00064	-.00083	1.84599	4.31990
10.290	25.242	.58480	.08449	.50146	.30771	.01148	.02728	-.00065	-.00021	1.62965	4.11175
10.290	30.257	.78403	.08829	.64281	.45404	.01590	.02486	-.00011	.00030	1.41575	4.11175
10.290	35.308	.99733	.07039	.77319	.63387	.02021	.02337	-.00004	-.00012	1.21980	4.05971
	GRADIENT	.03760	.00146	.02979	.02336	.00100	.00153	-.00000	.00013	-.04335	-.04171

ARC3.5-167OA73 B19W107V7 N21 AIR OFFPITCH ON (RB5F15) (05 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = .000
ELEVON = -40.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 21/ 0 RN/L = 2.10 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.350	.24887	.04582	.22574	.10948	.00106	.01586	-.00057	-.00015	2.06196	4.00673
10.290	20.385	.38870	.04736	.34786	.17979	.00649	.02495	-.00080	-.00018	1.93484	4.32082
10.290	25.391	.58675	.04868	.49113	.28700	.01035	.03473	-.00047	-.00038	1.71126	4.28592
10.290	30.385	.78258	.05262	.63116	.43120	.01406	.04124	-.00017	-.00031	1.48372	4.26847
10.290	35.428	.98254	.05447	.75274	.60235	.01883	.04493	.00004	-.00017	1.24968	4.30337
	GRADIENT	.03557	.00026	.02862	.02141	.00077	.00195	.00002	-.00004	-.04466	-.00697

ARC3.5-167OA73 B19W107V7 N23 AIR OFFPITCH UP (RB5F16) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 22/ 0 RN/L = 1.33 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.475	.23197	.05770	.20816	.11750	.00461	.01155	-.00035	-.00039	1.77158	4.28612
10.290	20.408	.38194	.05888	.33743	.18837	.00742	.02095	-.00053	-.00104	1.79132	4.32111
10.290	25.405	.58721	.06065	.48634	.29813	.01202	.03206	-.00050	-.00024	1.63131	4.28612
10.290	30.343	.75553	.06265	.62039	.43575	.01799	.03861	-.00020	.00016	1.42373	4.23363
10.290	35.400	.86196	.06656	.74557	.61150	.02039	.04109	-.00018	-.00017	1.21924	4.23363
	GRADIENT	.03708	.00035	.02860	.02198	.00082	.00222	.00001	.00016	-.03202	-.00700

ARC3.5-167OA73 B19W107V7 N23 AIR OFFPITCH UP (RB5F17) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-20.000	BDFLAP =	-14.290
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 23/ 0 RN/L = 1.74 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.254	.26248	.05947	.23758	.12843	.00398	.01137	-.00092	-.00029	1.87919	-.66323
10.290	15.482	.24353	.06024	.21327	.14233	.00480	.00941	-.00097	-.00025	1.49842	-.22899
10.290	20.264	.39890	.05683	.35265	.19077	.00875	.02058	-.00106	-.00055	1.84853	-.24444
10.290	25.287	.57882	.05932	.49813	.30070	.01193	.02724	-.00099	-.00089	1.65655	-.27934
10.290	30.286	.78228	.06086	.64492	.44689	.01704	.03083	-.00048	-.00057	1.44312	-.31424
10.290	35.348	.99313	.05819	.77640	.62201	.02008	.03304	-.00014	-.00075	1.24822	-.47128
	GRADIENT	.03837	.00090	.02908	.02197	.00063	.00133	.00001	-.00007	-.03838	-.00698

ARC3.5-167OA73 B19W107V7 N23 AIR OFFPITCH UP (RB5F18) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 24/ 0 RN/L = 1.58 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.184	.28325	.07524	.25366	.14680	.00209	-.00567	-.00066	-.00030	1.72789	-.43568
10.290	15.500	.26007	.05386	.23622	.12141	.00197	-.00810	-.00070	-.00068	1.94568	.03545
10.290	20.268	.43056	.05757	.38396	.20316	.00467	-.00377	-.00100	-.00027	1.88994	-.09670
10.290	25.339	.63638	.06132	.54891	.32777	.00888	-.00831	-.00109	-.00069	1.67468	-.22629
10.290	30.284	.84941	.08641	.70018	.48545	.01186	-.01669	-.00078	-.00075	1.44233	-.22629
10.290	35.400	1.07866	.06578	.83951	.67731	.01614	-.03308	-.00051	-.00088	1.23947	-.22629
	GRADIENT	.04059	.00074	.03253	.02458	.00063	-.00090	-.00002	-.00008	-.04245	-.02733

ARC3.5-167OA73 B19W107V7 N20 AIR OFF YAW (RB5F19) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 25/ 0 RN/L = 1.59 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	14.998	.28671	.08255	.25566	.15370	.00537	-.00557	-.00084	-.00032	1.66338	-.60263
10.290	15.471	.26331	.05569	.23807	.12410	.00547	-.00953	-.00112	-.00031	1.92480	-.00937
10.290	20.258	.43370	.05764	.38692	.20423	.00860	-.00571	-.00126	-.00004	1.89457	-.14896
10.290	25.237	.63366	.08057	.54744	.32525	.01173	-.00965	-.00105	-.00115	1.68314	-.16641
10.290	30.299	.89183	.08278	.70360	.48397	.01317	-.02013	-.00081	-.00119	1.45421	-.23621
10.290	35.367	1.07993	.06450	.84307	.67796	.01791	-.03484	-.00033	-.00120	1.24354	-.44560
	GRADIENT	.04002	.00059	.03209	.02419	.00063	-.00079	.00004	-.00022	-.04227	-.00349

DATE 13 NOV ?   TABULATED SOURCE DATA - ARC 3.5-167(OA73)

ARC3.5-167OA73 B19W107V7 N20   AIR OFF YAW   (RB5F20)   (05 OCT 73)

REFERENCE DATA

SREF =	.6090 SQ.FT.	XMRP =	.4600 IN.
LREF =	19.3900 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 26/ 0   RN/L = 1.55   GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.289	.29723	.08321	.22619	.14807	.00337	.01370	-.00043	-.00026	1.52757	-.30414
10.290	15.515	.23620	.05731	.21226	.11840	.00294	.01352	-.00049	-.00033	1.79272	.13209
10.290	20.308	.39763	.05815	.35273	.19254	.00530	.02448	-.00060	-.00053	1.83202	-.05985
10.290	25.388	.57873	.05917	.49747	.30158	.00755	.03166	-.00050	-.00070	1.64953	-.19945
10.290	30.406	.77701	.06258	.63847	.44723	.01283	.03718	-.00026	-.00026	1.42761	-.19945
10.290	35.421	.96610	.08459	.76615	.62416	.01584	.04028	.00011	-.00143	1.22750	-.19945
	GRADIENT	.03565	.00020	.02849	.02147	.00044	.00141	.00002	-.00003	-.03593	-.02746

ARC3.5-167OA73 B19W107V7 N19   AIR OFF YAW SIM   (RB5F21)   (05 OCT 73)

REFERENCE DATA

SREF =	.6090 SQ.FT.	XMRP =	.4600 IN.
LREF =	19.3900 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	10.620

RUN NO. 27/ 0   RN/L = 1.63   GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.330	.25064	.08648	.21866	.14966	.00372	.01425	-.00058	-.00018	1.46233	-.05301
10.290	20.232	.38481	.09996	.34033	.18934	.00812	.02467	-.00033	-.00030	1.79749	.20877
10.290	25.330	.58311	.06308	.48198	.29792	.01304	.03346	-.00013	-.00033	1.61780	.15641
10.290	30.262	.75711	.06464	.62136	.43738	.01567	.04061	-.00001	-.00078	1.42066	.52291
10.290	35.426	.96074	.07628	.73866	.61906	.01953	.04188	.00004	-.00090	1.19320	.20877
	GRADIENT	.03498	.00061	.02779	.02130	.00077	.00168	.00004	-.00001	-.03525	-.01027

ARC3.5-167OA73 B19W107V7 N19 AIR OFF YAW SIM (RB5F22) (05 OCT 73)

REFERENCE DATA			
SREF =	.6090 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA			
BETA =	.000	PC =	.000
ELEVON =	-20.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	10.620

RUN NO. 28/ 0 RN/L = 1.55 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.288	.25321	.00392	.22223	.14732	.00361	.00942	-.00065	-.00027	1.50845	-.10144
10.290	15.495	.23571	.05537	.21235	.11633	.00689	.00696	-.00039	-.00003	1.82547	.30058
10.290	20.249	.39207	.05736	.34798	.18951	.00927	.01979	-.00047	-.00020	1.83520	2.66013
10.290	30.304	.76492	.07079	.62468	.44708	.01698	.02625	-.00013	.00008	1.39724	.14325
10.290	35.392	.97259	.07027	.75216	.62058	.02080	.02756	-.00024	.00014	1.21203	1.06960
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ARC3.5-167OA73 B19W107V7 N19 AIR OFF YAW SIM (RB5F23) (05 OCT 73)

REFERENCE DATA			
SREF =	.6090 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA			
BETA =	.000	PC =	.000
ELEVON =	15.000	BDFLAP =	13.750
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	10.620

RUN NO. 29/ 0 RN/L = 1.52 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.234	.32257	.07087	.29266	.15295	.00321	-.05759	-.00105	-.00092	1.91348	-.40266
10.290	15.450	.07440	.01986	.06642	.03896	.02788	.00889	-.00521	-.00028	1.70461	.26402
10.290	20.251	.48653	.07598	.43016	.23967	.00743	-.07997	-.00099	-.00117	1.79484	1.65737
10.290	25.372	.70480	.08771	.59924	.38124	.01133	-.10548	-.00165	-.00006	1.57180	.25120
10.290	35.374	1.19597	.10895	.87950	.75804	.01857	-.16069	-.00179	-.00033	1.16022	.00291
	GRADIENT	.04283	.00230	.03302	.02785	.00076	-.00498	-.00013	.00022	-.04356	-.27854

ARC3.5-167OA73 B19W1C7V7 N19 AIR OFF YAW SIM (RB5F24) (05 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = .000
ELEVON = .000 BDFLAP = .000
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 10.620

RUN NO. 30/ 0 RN/L = 1.48 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.273	.27826	.03975	.25269	.13094	.00333	-.00505	-.00090	-.00021	1.92982	-.69731
10.290	15.478	.25901	.05675	.23447	.12382	.00447	-.00714	-.00081	-.00006	1.89372	.00533
10.290	20.256	.42617	.05753	.37990	.20152	.00649	-.00724	-.00084	-.00091	1.88516	.07559
10.290	25.334	.62583	.06085	.53960	.32279	.01053	-.01013	-.00095	-.00072	1.67167	-.01224
10.290	30.355	.83578	.06224	.68975	.47608	.01384	-.02042	-.00086	-.00038	1.44880	.00533
10.290	35.408	1.05790	.06313	.82566	.66439	.01898	-.03616	-.00054	-.00105	1.24274	.16009
	GRADIENT	.03931	.00065	.03144	.02568	.00079	-.00057	-.00002	.00004	-.04203	-.01729

ARC3.5-167OA73 B19W1D7V7 N22-N23 AIR OFFROLL ALT (RB5F25) (05 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = .000
ELEVON = .000 BDFLAP = .000
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 31/ 0 RN/L = 1.54 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.257	.26699	.06965	.23930	.13737	.00265	-.00702	-.00063	-.00017	1.74194	-.60612
10.290	15.462	.24470	.05413	.22141	.11741	.00477	-.00936	-.00072	.00013	1.88576	.17923
10.290	20.256	.41242	.05536	.36775	.19472	.00668	-.00991	-.00094	-.00027	1.88857	.00471
10.290	25.280	.60479	.05849	.52200	.31097	.01322	-.01357	-.00084	.00039	1.67860	-.22217
10.290	30.327	.79053	.06512	.64948	.45537	.01370	-.02205	-.00012	-.00171	1.42627	-.29198
10.290	35.383	1.02096	.07097	.79130	.64903	.01606	-.03444	-.00026	-.00023	1.21921	-.60612
	GRADIENT	.03844	.00062	.03082	.02323	.00131	-.00073	.00002	.00013	-.04196	-.04534

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73) (RB5F26) (05 OCT 73)

ARC3.5-167OA73 B19W107V7 N22-N23 AIR OFFROLL ALT

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1900 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = .000
ELEVON = -40.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 32/ 0 RN/L = 1.53 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.208	.25635	.08757	.22440	.15175	.00155	.01387	-.00050	-.00012	1.47872	-1.06029
10.290	15.488	.23578	.08054	.21105	.12131	.00204	.01336	-.00046	-.00006	1.73977	.17923
10.290	20.253	.38402	.08074	.34863	.19339	.00468	.02431	-.00074	.00001	1.80276	.02211
10.290	25.237	.57375	.08335	.49198	.30193	.00515	.03254	-.00054	-.00106	1.62944	-.53655
10.290	30.304	.77188	.06644	.63289	.44685	.00838	.03926	-.00001	-.00099	1.41633	-.53655
10.290	35.368	.97311	.07215	.75176	.62210	.01189	.04080	-.00000	-.00078	1.20844	-.53655
	GRADIENT	.03606	.00052	.02876	.02178	.00010	.00165	.00004	-.00021	-.03478	-.11210

(RB5F27) (05 OCT 73)

ARC3.5-167OA73 B19W107V7 N21-N23 AIR OFF ROLL

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1900 IN
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = .000
ELEVON = -40.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 33/ 0 RN/L = 1.53 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.170	.25518	.08304	.22978	.12762	.00248	.01427	-.00048	-.00042	1.80058	-.86080
10.290	15.464	.23591	.08016	.21135	.12089	.00506	.01232	-.00056	-.00016	1.74812	-.24977
10.290	20.243	.39449	.05953	.34938	.19272	.00758	.02447	-.00076	-.00031	1.81294	-.40689
10.290	25.312	.57005	.06164	.48896	.29945	.01287	.03277	-.00047	-.00044	1.63287	-.40689
10.290	30.305	.78556	.06346	.62893	.44109	.01505	.03812	.00022	-.00067	1.42586	-.40689
10.290	35.387	.97111	.06425	.75450	.61475	.01892	.03892	.00042	-.00100	1.22734	-.44180
	GRADIENT	.03463	.00034	.02753	.02105	.00104	.00164	.00006	-.00003	-.03552	-.00000

ARC3.5-167OA73 B19W107V7 N21 AIR OFFPITCH DN (RB5F28) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1600.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 34/ 0 RN/L = 1.56 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.185	.25744	.06299	.23195	.12023	.00590	.01438	-.00032	-.00032	1.80892	-.78136
10.290	15.445	.23564	.05959	.21126	.12019	.00627	.01224	-.00006	-.00011	1.75774	-.01333
10.290	20.262	.39291	.06055	.34762	.19287	.00895	.02476	-.00072	-.00047	1.80233	-.06570
10.290	25.295	.57335	.06354	.49124	.30241	.01031	.03042	-.00036	-.00137	1.62444	-.39735
10.290	30.282	.77622	.06590	.63724	.44810	.01331	.03062	.00008	-.00125	1.42210	-.46717
10.290	35.387	.97959	.06471	.76115	.62003	.01693	.04004	.00052	-.00132	1.22759	-.53699
	GRADIENT	.03587	.00059	.02855	.02177	.00067	.00112	.00007	-.00018	-.03536	-.06592

ARC3.5-167OA73 B19W107V7 N20 AIR OFF YAW (RB5F29) (05 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1600.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 35/ 0 RN/L = 1.50 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.242	.25702	.06261	.23152	.12798	.00423	.01356	-.00033	-.00032	1.80907	-.82367
10.290	15.462	.23621	.05976	.21173	.12057	.00495	.01145	-.00026	-.00011	1.75613	.11922
10.290	20.253	.39565	.06023	.35052	.19353	.00768	.02251	-.00059	-.00033	1.81116	-.16015
10.290	25.321	.57453	.06336	.49224	.30300	.00932	.03227	-.00036	-.00068	1.62453	-.29984
10.290	30.331	.77007	.06581	.63143	.44568	.01528	.03872	.00001	-.00097	1.41679	-.33476
10.290	35.384	.97306	.06710	.75447	.61817	.01848	.04075	.00026	-.00094	1.22049	-.40461
	GRADIENT	.03528	.00082	.02796	.02160	.00032	.00193	.00005	-.00011	-.03683	-.02756

ARC3.5-167OA73 B19M107V7 NEO AIR ON YAW (RB5N01) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0900 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	275.000
ELEVON =	-20.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1600.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 7/ 0 RN/L = 1.94 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.211	.25209	.05734	.22821	.12147	.01040	.01039	-.00129	-.00223	1.87876	274.06700
10.290	15.481	.23576	.05370	.21287	.11468	.01308	.00887	-.00162	-.00178	1.85611	278.80200
10.290	20.240	.38798	.05482	.34513	.18547	.01501	.01753	-.00105	-.00313	1.86079	273.78400
10.290	25.310	.58060	.05819	.49994	.30089	.01801	.02135	-.00073	-.00337	1.66155	277.30100
10.290	30.371	.78580	.06047	.64722	.44937	.02220	.02162	-.00057	-.00355	1.44028	277.36800
10.290	35.332	.98840	.06164	.77071	.62188	.02522	.02089	-.00097	-.00596	1.23932	273.53400
	GRADIENT	.03793	.00070	.03049	.02273	.00059	.00075	.00006	-.00005	-.03924	.69261

ARC3.5-167OA73 B19M107V7 NEO AIR ON YAW (RB5N02) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0900 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	275.000
ELEVON =	15.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1600.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 8/ 0 RN/L = 1.90 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	14.978	.31278	.06796	.28458	.14648	.01020	-.03985	-.00143	-.00362	1.94278	276.77400
10.290	15.907	.29480	.06438	.26686	.14085	.01487	-.03901	-.00213	-.00281	1.89460	281.45800
10.290	20.253	.47824	.07127	.42400	23242	.01483	-.05409	-.00165	-.00401	1.82428	279.45800
10.290	25.299	.69731	.08174	.59350	.37189	.01838	-.07588	-.00121	-.00491	1.60127	276.90800
10.290	30.331	.92160	.09017	.74991	.54323	.02251	-.09778	-.00116	-.00531	1.38047	279.32500
10.29C	35.278	1.15068	.09757	.88301	.74423	.02861	-.11824	-.00148	-.00739	1.18649	275.97400
	GRADIENT	.04342	.00208	.03399	.02764	.00070	-.00432	.00009	-.00018	-.04420	-.50540

ARC3.5-167OA73 B19W107V7 N20 AIR ON YAW (RB5N03) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0900 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 275.000
ELEVON = -40.000 BDFLAP = .000
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1600.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 9/ 0 RN/L = 1.91 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.278	.24397	.05787	.22010	.12011	.00627	.01254	-.00061	-.00116	1.83255	281.13300
10.290	15.315	.22833	.05451	.20543	.11360	.01137	.01119	-.00064	-.00069	1.80837	282.86100
10.290	20.236	.37866	.05581	.33617	.18340	.01366	.02042	-.00047	-.00204	1.83294	281.04900
10.290	25.326	.56802	.05660	.48836	.29595	.01667	.02632	-.00011	-.00238	1.65015	277.72600
10.290	30.353	.76561	.06129	.62969	.43978	.01918	.02801	.00040	-.00264	1.43183	277.60900
10.290	35.395	.97169	.06401	.75503	.61499	.02445	.02766	.00030	-.00350	1.22771	277.72600
	GRADIENT	.03717	.00055	.02990	.02211	.00059	.00116	.00007	-.00007	-.03591	-.65286

ARC3.5-167OA73 B19W107V7 N21-N23 AIR ON ROLL (RB5NC7) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0900 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 294.000
ELEVON = -40.000 BDFLAP = -14.290
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1600.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 13/ 0 RN/L = 1.88 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.244	.22750	.04613	.20736	.10432	.00122	.02281	.00298	-.00339	1.98771	305.85100
10.290	25.303	.54980	.04606	.47737	.27663	.00578	.04592	.00357	-.00352	1.72564	307.42200
10.290	30.343	.74706	.04816	.62040	.41896	.00941	.05025	.00290	-.00350	1.48081	306.82800
10.290	35.363	.95179	.05083	.74686	.59214	.01250	.05439	.00309	-.00397	1.26131	305.10100
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ARC3.5-167OA73 B19W107V7 NE1-NE3 AIR ON ROLL (RB5N08) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4600 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 294.000
ELEVON = -20.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 14/ 0 RN/L = 1.88 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.173	.24279	.05307	.22044	.11477	.01160	.01690	.00053	-.00326	1.92089	170.80500
10.290	15.439	.20899	.04290	.19004	.09698	.01036	.01968	.00194	-.00513	1.95964	309.47500
10.290	20.256	.36601	.04537	.32767	.16928	.01623	.03137	.00184	-.00540	1.93568	307.03200
10.290	25.237	.54662	.04779	.47606	.27723	.01963	.04165	.00161	-.00533	1.71720	307.95700
10.290	30.307	.74363	.04902	.61726	.41757	.02394	.04735	.00072	-.00562	1.47821	307.99100
10.290	35.379	.94736	.04996	.74349	.58924	.02909	.04875	.00050	-.00602	1.26178	307.38100
	GRADIENT	.03670	.00049	.02979	.02167	.00068	.00206	-.00005	.00001	-.04386	.18570

ARC3.5-167OA73 B19W107V7 NE1-NE3 AIR ON ROLL (RB5N09) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4600 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 294.000
ELEVON = 15.000 BDFLAP = 13.750
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 15/ 0 RN/L = 1.83 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.180	.29866	.05629	.27392	.13476	.00327	-.04099	.00270	-.00810	2.03264	306.61800
10.290	15.408	.27672	.05446	.25217	.12620	.00504	-.04084	.00235	-.00758	1.99897	308.54900
10.290	20.256	.47925	.06085	.42682	.22770	.00700	-.06376	.00274	-.00797	1.87448	306.59900
10.290	25.240	.68716	.07476	.58968	.36063	.00927	-.08598	.00240	-.00724	1.63514	307.85100
10.290	30.272	.92363	.08797	.75525	.54280	.01413	-.11529	.00202	-.00707	1.39169	307.08300
10.290	35.349	1.14828	.09515	.87990	.74080	.01859	-.14042	.00126	-.00590	1.18777	307.24000
	GRADIENT	.04171	.00179	.03268	.02867	.00046	-.00446	-.00007	.00014	-.04802	.25922

ARC3.5-167OA73 B19W107V7 N21-N23 AIR ON ROLL (RB5N10) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	294.000
ELEVON =	.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 16/ 0 RN/L = 1.82 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.209	.24164	.04693	.22066	.10868	.00232	.00839	.00239	-.00668	2.03229	307.71200
10.290	15.460	.27357	.04396	.20357	.10192	.00472	.00804	.00256	-.00674	1.99742	309.78900
10.290	20.292	.38785	.04680	.34752	.17847	.00893	.01442	.00302	-.00847	1.94721	307.71200
10.290	25.260	.58070	.04845	.50366	.29131	.00834	.01477	.00327	-.00854	1.72963	307.69400
10.290	30.262	.75893	.05040	.66035	.44363	.01388	.00346	.00265	-.00826	1.48850	307.46700
10.290	35.369	1.01775	.05112	.80053	.63081	.01681	-.00871	.00261	-.00893	1.26874	307.25800
	GRADIENT	.03876	.00033	.03154	.02276	.00049	.00007	.00005	-.00001	-.04369	-.00363

ARC3.5-167OA73 B19W107V7 N20 AIR ON YAW (RB5N11) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	275.000
ELEVON =	.000	BDFLAP =	.000
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 17/ 0 RN/L = 1.58 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.205	.26828	.05203	.24235	.11978	.01116	.00075	-.00167	-.00360	2.02324	291.97200
10.290	15.478	.24835	.05299	.22521	.11734	.01224	.00056	-.00195	-.00328	1.91935	291.97200
10.290	20.284	.41454	.05532	.36972	.19547	.01654	.00275	-.00158	-.00437	1.89146	290.92500
10.290	25.317	.61126	.05787	.52781	.31370	.01977	-.00590	-.00134	-.00518	1.68252	291.25700
10.290	30.355	.82201	.06053	.67873	.46764	.02316	-.01307	-.00113	-.00682	1.45139	291.39600
10.290	35.354	1.04731	.06277	.81785	.65721	.02765	-.02996	-.00127	-.00742	1.24444	291.44900
	GRADIENT	.03893	.00050	.03129	.02340	.00064	-.00163	.00005	-.00016	-.04135	.06571

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73)

ARC3.5-167OA73 B19W107V7 N21 AIR ON PITCH DN (RB5N12) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 309.000
ELEVON = .000 BDFLAP = .000
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 18/ 0 RN/L = 1.56 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.177	.29012	.04518	.22957	.10909	.00716	.01162	-.00019	-.00551	2.10442	319.62600
10.290	15.377	-.32881	5.43589	-1.75630	5.15449	1.09327	.25806	-.12589	.01367	-.34073	314.50100
10.290	20.251	.39705	.04730	.35607	.18200	.04962	.01660	.00336	-.00854	1.95648	326.33800
10.290	25.317	.58559	.05011	.50792	.29571	.01906	.01413	.00001	-.00623	1.71764	326.63900
10.290	30.304	.80575	.05726	.68504	.45900	.02151	.00488	.00010	-.00879	1.46163	325.13300
10.290	35.383	1.03417	.05438	.81156	.64332	.02369	-.00887	-.00004	-.00930	1.26152	322.89900
	GRADIENT	.03722	.00052	.02998	.02245	-.00603	-.00049	-.00066	.00006	-.04715	.05863

ARC3.5-167OA73 B19W107V7 N21 AIR ON PITCH DN (RB5N13) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 309.000
ELEVON = 15.000 BDFLAP = 13.750
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 19/ 0 RN/L = 1.89 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.314	1.08526	.34970	.95436	.62391	.19603	-.09239	-.08567	.07296	1.52965	321.00600
10.290	20.238	.47975	.06307	.42825	.22526	.01495	-.05830	.00004	-.00742	1.90112	327.97000
10.290	25.235	.68435	.06801	.59960	.35645	.01916	-.08803	-.00009	-.00830	1.68215	325.60600
10.290	30.288	.92632	.07669	.76130	.53316	.02429	-.11258	-.00038	-.00776	1.42604	324.16600
10.290	35.246	1.13584	.07974	.86160	.72080	.02576	-.13927	-.00116	-.00654	1.22343	322.94500
	GRADIENT	.04310	.00075	.03441	.02635	.00085	-.00557	-.00003	-.00018	-.04390	-.43461

ARC3.5-167OA73 B19W107V7 N21 AIR ON PITCH DN (RB5N14) (04 OCT 73)

REFERENCE DATA				PARAMETRIC DATA			
SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.	BETA =	.000	PC =	309.000
LREF =	19.3500 IN.	YMRP =	.0000 IN.	ELEVON =	-20.000	BDFLAP =	-14.250
BREF =	14.0500 IN.	ZMRP =	.1500 IN.	SPDBRK =	40.000	Q PSF =	350.000
SCALE =	.0150			PT PSI =	1800.000	TT DEG =	2000.000
				RE/L =	1.720	EPSLON =	1.159

RUN NO. 20/ 0 RN/L = 1.52 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.319	.23484	.07730	.20607	.13880	.01004	.02456	.00012	-.00406	1.50862	326.49900
10.290	20.256	.37296	.05639	.33039	.18203	.01546	.03162	.00004	-.00458	1.81506	325.75300
10.290	25.257	.5?720	.05844	.47900	.29081	.02043	.04228	-.00012	-.00496	1.64828	326.13500
10.290	30.264	.75848	.06192	.62390	.43574	.02577	.04524	-.00010	-.00475	1.43180	325.73600
10.290	35.300	.96003	.06357	.74678	.60665	.02958	.04938	-.00063	-.00569	1.23099	325.16100
	GRADIENT	.03863	.00041	.02971	.02171	.00099	.00213	-.00003	-.00008	-.03334	.07636

ARC3.5-167OA73 B19W107V7 N21 AIR ON PITCH DN (RB5N15) (04 OCT 73)

REFERENCE DATA				PARAMETRIC DATA			
SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.	BETA =	.000	PC =	309.000
LREF =	19.3500 IN.	YMRP =	.0000 IN.	ELEVON =	-40.000	BDFLAP =	-14.250
BREF =	14.0500 IN.	ZMRP =	.1500 IN.	SPDBRK =	40.000	Q PSF =	350.000
SCALE =	.0150			PT PSI =	1800.000	TT DEG =	2000.000
				RE/L =	1.720	EPSLON =	1.159

RUN NO. 21/ 0 RN/L = 1.81 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.336	.22986	.03365	.21278	.09324	.00893	.02707	.00032	-.00261	2.28197	326.78400
10.290	20.298	.37012	.03527	.33502	.16123	.01511	.03894	.00018	-.00256	2.07789	332.01900
10.290	25.403	.55011	.03707	.48102	.26948	.02021	.04964	.00014	-.00271	1.78500	352.01900
10.290	30.380	.74471	.04005	.62213	.41127	.02465	.05228	.00044	-.00296	1.51269	331.30300
10.290	35.400	.93920	.04206	.74120	.57834	.02636	.05758	-.00007	-.00352	1.28159	329.34900
	GRADIENT	.03497	.00035	.02836	.02103	.00099	.00169	-.00001	-.00003	-.05690	-.00001

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73)

ARC3.5-167OA73 B19W107V7 M23 AIR ON PITCH UP (RB5N16) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	278.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	390.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 22/ 0 RN/L = 1.42 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.365	.23807	.08166	.20863	.14230	-.00218	.01253	.00230	-.00166	1.46750	301.39900
10.290	20.387	.37907	.05035	.33779	.17825	.00200	.02216	.00287	-.00133	1.88446	302.23900
10.290	25.414	.55860	.05221	.48051	.28612	.00086	.03067	.00466	-.00291	1.67942	301.39900
10.290	30.368	.74695	.05418	.61880	.42538	.01067	.03684	.00273	-.00193	1.45471	301.39900
10.290	35.400	.89821	.05801	.74746	.60236	.01468	.04181	.00265	-.00106	1.24088	301.39900
	GRADIENT	.03535	.00037	.02839	.02126	-.00027	.00189	.00036	-.00031	-.04079	-.16706

ARC3.5-167OA73 B19W107V7 M23 AIR ON PITCH UP (RB5N17) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	278.000
ELEVON =	-20.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	390.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 23/ 0 RN/L = 1.72 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.298	[illegible]	.03571	.22937	.12030	-.00301	.00862	.00195	-.00165	1.90667	293.84600
10.290	15.479	.10846	-.00848	.10823	.02270	-.18169	-.03752	.09246	-.05041	4.66025	294.96300
10.290	20.298	.39106	.03524	.34775	.18721	.00068	.01670	.00226	-.00232	1.85749	290.26900
10.290	25.271	[illegible]	.03832	.49108	.29633	.00079	.02867	.00443	-.00318	1.65724	292.92100
10.290	30.264	.76/89	.03862	.63366	.43531	.01148	.03301	.00202	-.00209	1.45566	292.92100
10.290	35.334	.97829	.05630	.78592	.61172	.01558	.03287	.00236	-.00222	1.25142	292.92100
	GRADIENT	.03579	.00061	.02858	.02175	.00002	.00163	.00043	-.00017	-.03992	.32874

ARC3.5-167OA73 B19W107V7 N23 AIR ON PITCH UP (RBSN18) (04 OCT 73)

REFERENCE DATA				PARAMETRIC DATA			
SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.	BETA =	.000	PC =	278.000
LREF =	19.3500 IN.	YMRP =	.0000 IN.	ELEVON =	.000	BDFLAP =	.000
BREF =	14.0500 IN.	ZMRP =	.500 IN.	SPDBRK =	40.000	Q PSF =	350.000
SCALE =	.0150			PT PSI =	1800.000	TT DEG =	2000.000
				RE/L =	1.720	EPSLON =	1.199

RUN NO. 24/ 0 RN/L = 1.59 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.194	.27523	.07481	.24600	.14433	-.00400	-.00780	.00228	-.00177	1.70490	293.44600
10.290	19.902	.25557	.04938	.23307	.11589	-.00431	-.00804	.00211	-.00209	2.01121	293.67200
10.290	20.256	.42412	.05178	.37998	.19539	-.00234	-.00514	.00238	-.00240	1.94467	291.35200
10.290	25.339	.62441	.05571	.54050	.31758	-.00326	-.00848	.00452	-.00303	1.70190	292.73000
10.290	30.284	.83380	.06167	.68916	.47353	.00619	-.01631	.00183	-.00239	1.45536	292.50300
10.290	35.411	1.08451	.06200	.85167	.68734	.01137	-.03280	.00197	-.00242	1.24624	292.90300
	GRADIENT	.03940	.00078	.03158	.02404	-.00018	-.00066	.00042	-.00028	-.04776	.27109

ARC3.5-167OA73 B19W107V7 N20 AIR ON YAW (RBSN19) (04 OCT 73)

REFERENCE DATA				PARAMETRIC DATA			
SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.	BETA =	.000	PC =	275.000
LREF =	19.3500 IN.	YMRP =	.0000 IN.	ELEVON =	.000	BDFLAP =	.000
BREF =	14.0500 IN.	ZMRP =	.1500 IN.	SPDBRK =	40.000	Q PSF =	350.000
SCALE =	.0150			PT PSI =	1800.000	TT DEG =	2000.000
				RE/L =	1.720	EPSLON =	1.199

RUN NO. 25/ 0 RN/L = 1.60 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	14.996	.27042	.05877	.24601	.12674	.01238	.00057	-.00163	-.00353	1.94108	288.28600
10.290	15.493	.24818	.05344	.22489	.11779	.01287	.00040	-.00228	-.00339	1.90923	291.22000
10.290	20.296	.41331	.05504	.36869	.19473	.01559	.00287	-.00176	-.00454	1.89338	288.28800
10.290	25.289	.61086	.05794	.53295	.31563	.01796	-.00303	-.00139	-.00539	1.68848	285.11200
10.290	30.299	.83230	.05972	.68848	.47148	.02221	-.01381	-.00085	-.00578	1.46026	283.12300
10.290	35.412	1.05899	.06211	.82709	.66426	.02576	-.02802	-.00117	-.00746	1.24513	287.95700
	GRADIENT	.04036	.00058	.03276	.02412	.00047	-.00118	.00007	-.00017	-.04087	-.63349

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73)

ARC3.5-167OA73 B19W107V7 N20 AIR ON YAW (RB5N20) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	275.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	1.159

RUN NO. 26/ 0 RN/L = 1.56 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.294	.24709	.08055	.21715	.14267	.00845	.01494	-.00072	-.00132	1.52197	291.08400
10.290	15.318	.25191	.05284	.20832	.11296	.01117	.01488	-.00083	-.00062	1.85311	291.37900
10.290	20.367	.36679	.05862	.34290	.18780	.01343	.02814	-.00075	-.00208	1.82897	290.33200
10.290	25.413	.57113	.05778	.49107	.29728	.01604	.03356	-.00038	-.00286	1.65186	290.57600
10.290	30.408	.78113	.08145	.62534	.43822	.01857	.04071	.00023	-.00347	1.42702	290.33200
10.290	35.434	.97036	.06333	.75392	.61418	.02308	.04279	.00001	-.00409	1.22752	290.33200
	GRADIENT	.03653	.00023	.02936	.02172	.00052	.00147	.00007	-.00011	-.03470	.04836

ARC3.5-167OA73 B19W107V7 N19 AIR ON YAW SIM (RB5N21) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	314.000
ELEVON =	-40.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	10.620

RUN NO. 27/ 0 RN/L = 1.65 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.361	.24841	.08580	.21777	.14880	.00437	.01456	-.00054	-.00029	1.46348	313.30100
10.290	20.243	.38447	.05813	.34027	.18850	.00867	.02380	-.00028	-.00070	1.80511	281.68700
10.290	25.336	.56834	.07553	.47701	.30945	.01311	.03142	-.00020	-.00115	1.54160	288.15300
10.290	30.276	.75728	.08419	.62161	.43723	.01717	.03718	-.00003	-.00127	1.42171	297.07100
10.290	35.400	.96011	.07579	.73071	.61796	.02080	.04146	.00017	-.00050	1.19540	306.37300
	GRADIENT	.03816	.00322	.02885	.02374	.00083	.00148	.00002	-.00009	-.05173	1.23018

ARC3.5-167OA73 B19W107V7 N19 AIR ON YAW SIM (RBSN22) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	314.000
ELEVON =	-20.000	BDFLAP =	-14.250
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	10.620

RUN NO. 28/ 0 RN/L = 1.46 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.285	.25065	.08317	.21985	.14631	.00507	.01114	-.00083	-.00058	1.50271	330.15100
10.290	20.253	.39003	.05629	.34643	.18732	.00822	.01876	-.00045	-.00143	1.84443	330.08100
10.290	25.368	.58607	.05913	.48615	.29597	.01125	.02578	-.00026	-.00179	1.64258	330.11600
10.290	30.284	.75305	.07029	.61500	.44024	.01787	.03054	-.00019	-.00016	1.39697	330.30500
10.290	35.355	.90852	.07030	.74923	.61776	.02119	.02603	.00017	-.00116	1.21282	330.39600
	GRADIENT	.03441	.00056	.02731	.02114	.00040	.00176	.00004	-.00007	-.03946	.00685

ARC3.5-167OA73 B19W107V7 N19 AIR ON YAW SIM (RBSN23) (04 OCT 73)

REFERENCE DATA

SREF =	.6050 SQ.FT.	XMRP =	.4800 IN.
LREF =	19.3500 IN.	YMRP =	.0000 IN.
BREF =	14.0500 IN.	ZMRP =	.1500 IN.
SCALE =	.0150		

PARAMETRIC DATA

BETA =	.000	PC =	314.000
ELEVON =	15.000	BDFLAP =	13.750
SPDBRK =	40.000	Q PSF =	350.000
PT PSI =	1800.000	TT DEG =	2000.000
RE/L =	1.720	EPSLON =	10.620

RUN NO. 29/ 0 RN/L = 1.60 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.292	.32318	.07051	.29325	.15304	.00313	-.05733	-.00120	-.00043	1.91612	329.88800
10.290	20.237	.48341	.07624	.43658	.24220	.00826	-.07810	-.00147	-.00069	1.80257	330.94300
10.290	25.374	.70304	.08702	.59793	.37990	.01191	-.10873	-.00165	-.00102	1.57392	329.68800
10.290	35.349	1.16094	.10833	.88424	.76005	.01917	-.16214	-.00162	-.00077	1.16343	329.85300
	GRADIENT	.04081	.00210	.03141	.02680	.00071	-.00596	-.00003	-.00006	-.04451	-.20575

DATE 13 NOV 73 TABULATED SOURCE DATA - ARC 3.5-167(OA73)

ARC3.5-167OA73 B19W107V7 N19 AIR ON YAW SIN (RB5N24) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 314.000
ELEVON = .000 BDFLAP = .000
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 10.620

RUN NO. 30/ 0 RN/L = 1.49 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.272	.27705	.05956	.25158	.13042	.00345	-.00473	-.00099	-.00052	1.92904	323.86800
10.290	15.503	.28484	.05686	.23898	.12561	.00510	-.00589	-.03108	-.00012	1.91067	330.19100
10.290	20.256	.42632	.05814	.38170	.20283	.00809	-.00275	-.00117	-.00094	1.88189	330.52500
10.290	25.316	.62347	.05994	.54338	.32336	.01253	-.01061	-.00102	-.00096	1.68044	330.64800
10.290	30.346	.83711	.06189	.69115	.47634	.01586	-.01781	-.00077	-.00081	1.45096	330.70100
10.290	35.376	1.05453	.06213	.82368	.66117	.01922	-.03990	-.00099	-.00164	1.24605	330.52500
	GRADIENT	.03975	.00036	.03195	.02362	.00066	-.00155	.00003	-.00000	-.03981	.02431

ARC3.5-167OA73 B19W107V7 N22-N23 AIR ON ROLL ALT (RB5N25) (04 OCT 73)

REFERENCE DATA

SREF = .6050 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 273.000
ELEVON = .000 BDFLAP = .000
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 31/ 0 RN/L = 1.55 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.260	.21177	.08837	.18630	.12169	.00279	.01963	.00313	-.00731	1.53091	290.40900
10.290	20.268	.35967	.03001	.32700	.15275	.00881	.02383	.00369	-.00891	2.14077	290.21700
10.290	25.251	.54177	.03247	.47815	.26047	.01037	.02260	.00366	-.00881	1.82801	290.20000
10.290	30.267	.73432	.03351	.61733	.39906	.01382	.01422	.00303	-.00949	1.54698	289.92100
10.290	35.381	.93964	.05063	.75229	.59634	.01731	-.00194	.00207	-.00929	1.26151	290.44400
	GRADIENT	.03655	.00049	.02993	.02162	.00072	-.00027	.00006	.00002	-.06277	-.00241

ARC3.5-167OA73 B19W107V7 N22-N25 AIR ON ROLL ALT (RBSN26) (04 OCT 73)

REFERENCE DATA

SREF = .8030 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 275.000
ELEVON = -40.000 BDFLAP = -14.290
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.199

RUN NO. 32/ 0 RN/L = 1.56 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.232	.21634	.06482	.19171	.11938	.00272	.03378	.00307	-.00433	1.60584	290.60000
10.290	15.511	.19816	.02817	.18437	.08041	.00394	.03335	.00308	-.00430	2.29296	289.96200
10.290	20.240	.35777	.03017	.32515	.15211	.00441	.04306	.00390	-.00458	2.13760	286.94400
10.290	25.280	.54493	.03154	.47342	.26109	.00814	.05300	.00347	-.00384	1.83630	289.23100
10.290	30.317	.74009	.35366	.62180	.40264	.01337	.59044	.00311	-.00411	1.54454	288.79500
10.290	35.347	.94199	.34917	.73980	.58508	.01503	.08533	.00345	-.00332	1.26460	287.48800
	GRADIENT	.03738	.00027	.03079	.02175	.00074	.00198	-.00009	.00015	-.08013	.45644

ARC3.5-167OA73 B19W107V7 N21-N23 AIR ON ROLL (RBSN27) (04 OCT 73)

REFERENCE DATA

SREF = .8030 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 375.000
ELEVON = -40.000 BDFLAP = -14.290
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1800.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.199

RUN NO. 33/ 0 RN/L = 1.53 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.175	.22270	.04389	.20342	.10076	.00296	.02726	.00388	-.00446	2.01896	393.39300
10.290	15.489	.20823	.04053	.18791	.09413	.00502	.02808	.00387	-.00448	1.99623	392.32800
10.290	20.291	.36203	.04113	.32541	.16390	.00786	.03732	.00406	-.00480	1.98543	391.64700
10.290	25.308	.54185	.04263	.47163	.27016	.01042	.04596	.00433	-.00489	1.74578	392.32800
10.290	30.317	.73815	.04362	.61518	.41026	.01620	.05146	.00377	-.00477	1.49951	392.24100
10.290	35.360	.94196	.04930	.73946	.58558	.02036	.09544	.00394	-.00517	1.26278	392.67700
	GRADIENT	.03558	.00030	.02893	.02102	.00051	.00171	.00005	-.00002	-.04742	.13473

ARC3.5-167OA73 B19M107V7 N21 AIR ON PITCH DN (RBSN28) (04 OCT 73)

REFERENCE DATA

SREF = .6090 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 375.000
ELEVON = -40.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1600.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 34/ 0 RN/L = 1.57 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.180	.23471	.04396	.21610	.10554	.01240	.02953	.00066	-.00314	2.07748	395.43200
10.290	15.490	.21973	.04088	.19708	.09671	.01364	.02971	.00069	-.00309	2.03788	394.45500
10.290	20.258	.37184	.04084	.33410	.16694	.01641	.03889	-.00006	-.00326	2.00137	394.86400
10.290	25.257	.53817	.04425	.48598	.27819	.02006	.04616	.00016	-.00362	1.74678	395.01300
10.290	30.257	.73429	.04599	.60836	.41979	.02517	.05408	.00065	-.00439	1.49884	394.76900
10.290	35.360	.95628	.04543	.75558	.59073	.02937	.06018	.00022	-.00446	1.27535	394.68100
	GRADIENT	.03737	.00086	.02055	.02224	.00073	.00165	.00004	-.00011	-.05080	.08877

ARC3.5-167OA73 B19M107V7 N20 AIR ON YAW (RBSN29) (04 OCT 73)

REFERENCE DATA

SREF = .6090 SQ.FT. XMRP = .4800 IN.
LREF = 19.3500 IN. YMRP = .0000 IN.
BREF = 14.0500 IN. ZMRP = .1500 IN.
SCALE = .0150

PARAMETRIC DATA

BETA = .000 PC = 375.000
ELEVON = -40.000 BDFLAP = -14.250
SPDBRK = 40.000 Q PSF = 350.000
PT PSI = 1600.000 TT DEG = 2000.000
RE/L = 1.720 EPSLON = 1.159

RUN NO. 36/ 0 RN/L = 1.80 GRADIENT INTERVAL = 20.00/ 30.00

MACH	ALPHA	CN	CA	CL	CD	CY	CLM	CYN	CBL	L/D	PC
10.290	15.242	.24530	.05755	.21982	.11949	.01314	.01624	-.00106	-.00187	1.83795	394.96000
10.290	15.471	.22540	.05431	.20883	.11240	.01291	.01436	-.00124	-.00165	1.80305	394.29900
10.290	20.258	.36222	.05622	.33012	.18507	.01662	.02858	-.00096	-.00318	1.83232	394.29900
10.290	25.310	.58172	.05687	.48263	.29537	.02013	.03569	-.00034	-.00271	1.64516	394.35100
10.290	30.327	.70134	.06087	.60642	.43696	.02302	.04087	.00019	-.00305	1.43358	394.57800
10.290	35.376	.98801	.06227	.74346	.60423	.02706	.04460	.00001	-.03460	1.23041	394.63100
	GRADIENT	.13551	.00052	.02839	.02142	.00063	.00180	.00012	.00009	-.05703	.01028